Engineering News-Record

Devoted to Civil Engineering and Contracting — McGraw-Hill Company, Inc.

July 5, 1923

Column Reinforcing Steel
in Grauman's Theater and Office Building
Los Angeles, Calif.

KREOLITE KOUNTERSUNK - LUG - BLOCKS

"The Paving that's Saving"

ABOVE all things, permanence is indispensable to bridge floors.

Kreolite Kountersunk Lug Wood Block Bridge Floors actually grow better under constant use.

Lony laboratory research has resulted in the discovery of valuable Kreolite preservatizes with which the blocks are impregnated by our patented process.

The exclusive design of the blocks allows openings between them. When these are filled with Kreolite Pitch, the floor is bound securely together, with adequate allowance for expansion and contraction.

In laying, only the tough end grain is exposed to wear.

To all city and county engineers and others interested we extend, gratis, the services of our trained staff of bridge experts.

Write for detailed specifications and information.

THE JENNISON-WRIGHT COMPANY
79 Kreolite Building, Toledo, Ohio

INDEX TO ENGINEERING NEWS-RECORD

VOLUME 91—July 1 to December 31, 1923

July 5 ..... 1 to 44
July 12 ..... 45 to 84
July 19 ..... 85 to 124
July 26 ..... 125 to 164
Aug. 2 ..... 165 to 208
Aug. 9 ..... 209 to 248
Aug. 16 ..... 249 to 288
Aug. 23 ..... 289 to 328
Aug. 30 ..... 329 to 370
Sept. 6 ..... 371 to 414
Sept 13 ..... 415 to 456
Sept. 20 ..... 457 to 496
Sept. 27 ..... 497 to 538
Oct. 4 ..... 539 to 582
Oct. 11 ..... 583 to 622
Oct. 18 ..... 623 to 662
Oct. 25 ..... 663 to 702
Nov. 1 ..... 703 to 746
Nov. 8 ..... 747 to 786
Nov. 15 ..... 787 to 828
Nov. 22 ..... 829 to 870
Nov. 29 ..... 871 to 912
Dec. 6 ..... 913 to 958
Dec 13 ..... 959 to 1000
Dec. 20 ..... 1001 to 1040
Dec. 27 ..... 1041 to 1080

A

Accelerators, effect on concrete a142
Accident prevention:
Federal activities, safety provisions recommended n656

ACCIDENTS

Brick wall collapses in wind storm, Brooklyn n33
Bureau of Standards, dynamometer laboratory explosion, four killed n527
Explosion caused by gasoline leak n615
Football stands. (See Grandstands.)
Ice house, concrete, wrecked by overturning ice due to flood (C. W. Lusk) *18
Aeronautics:
Accelerations in airplane maneuvering .. 185
Building the Navy airship ZR1 .... e209, *212
Time for tribute, 20-year anniversary of first flight e960
African railways, electrification 99
Air vibrations due to fluttering of water sheet over dams (F. I. Winslow) 107
Alaska:
Harding visit, "to open up Alaska." ... e85
Highway development by Alaska road commission (J. G. Steese) *506
Engineering trail making e497
Topographic and mining survey finished. 295
Alkali, effect on concrete, A.S.T.M. discussion (G. M. Williams) a56
Alsace-Lorraine, reorganization of railways. 604
Aluminum paints reduce radiation j522
American Association of Engineers:
Dismissal of A. P. Davis from U. S. Reclamation Service, will ask Congress to investigate n156
Meeting 695
American Association of Port Authorities, acts on equipment design 177
American Association of State Highway Officials, meeting 982, n991
American Automobile Association, broadcasting road information n569
American Chemical Society, sewage and water supply discussed at Milwaukee meeting n487
American Construction Council announces apprenticeship committee n947
Meeting 532
Annual meeting n499, n489
American Institute of Consulting Engineers, Ethics Committee Case 21 677
American Public Health Association:
Calver, H. N., is sanitary engineer n403
Convention contrasts e623
Meeting n654
American Railway Bridge and Building Association, meeting n821
American Society for Municipal Improvement:
City problems discussed at Atlanta (R. Toensfeld, S. C. Rogers, L. A. S. Wood, H. P. Eddy, L. M. Fisher, C. D. Pollock) a850, n860

AMERICAN SOCIETY FOR TESTING MATERIALS

Annual meeting e2, 22, a26
Concrete, behavior of, discussed at annual meeting e46, 52
Endurance of steel in tension, torsion and impact tests, e291, (D. J. McAdam) .. a*298
Benefits of some researches in concrete, accelerators, fatigue of mortar, workability tests, behavior of slag aggregate a*142
Specifications and facts concerning materials 22

AMERICAN SOCIETY OF CIVIL ENGINEERS

Building accidents and their prevention, report of committee on structural safety e85, a88
Cement committee suggested e583
Committee sees President Coolidge on federal reorganization n733
City Planning Division, organization n240
Davis, A. P., protest on removal of, from U. S. Reclamation Service n75, e85
Earthquake committee to investigate behavior of Japanese structures e529, n571
Education Committee for co-operation with Society for Promotion of Engineering Education, civil engineers appointed n1033
Grunsky, C. E., nominated as president .. n319
Meetings, Chicago, Ill. 102
Richmond, Va. n529, n893
Sanitary section: three in the field e664
Society co-operation e125
American Society of Mechanical Engineers:
Low, Fred R., new president n614
Angle-bar weights, rule for computing j232
Angles supporting brick veneer carried by inserts in concrete n*1037
Appointed rounds their (airship progress) e329
Apprentices. (See Labor, apprentices; Engineers, apprentices.)
Arbitration Court, New York Building Congress e829
Argentine-Chilean transandine railway, building (R. F. Maury) *332
Asphalt, simplification of grades, effective Jan. 1, 924 ..... n201, n658, 1 663
Ash pits, water economy of (W. Volkhardt) 1 526

ASSOCIATED GENERAL CONTRACTORS OF AMERICA

Ballots for Officers n1031
Bid, standard form adopted n31
Bidders' responsibilities studied by committee n616
Contractors' responsibility, A. G. C. to define e583
Cranford, F. L., nominated as president .. n652
Denver chapter organized n362
Concrete mixers, standards discussed n36
Approved by committee n120
Canvass opinion on need of 21-E mixer n160
Tilting mixers discussed at conference n244
Augusta, Ga., unlikely to get channel to sea 976
Austin reservoir, Texas. (See Reservoirs.)
Australia, new North-South Ry. 792
Austria, reorganizing railways of 807

B

Backfilling to avoid settlement (L. B. Manheimer) 1 113
Barge, upended, moved 43 miles by rail .. j*522
Barges, government lines, seeking aid for . n906
Federal barge service, corporate management suggested n1033
Bayonne, N. J., rejects proposal for shipping terminal n528
Beaumont, Tex., rainfall of 12.76 in. in 4½ hr. 63
Berkeley, Calif., fire sweeps thirty-seven blocks n529
Bids. (See Contracting, bids.)
Biography:
Hunt, Robert W. e85, *116
Birdseye party, survey of Grand Canyon. (See Surveys, Colorado River.)
Bonds:
Issues voted on in November n818
Municipal bond market overloaded e623

BOOK REVIEWS

"Acoustics of Buildings" (F. R. Watson) 483
"Best-City Charter" (R. J. Harding) 812
"Brief Drawing" (R. C. Ringwalt) 648
"Bureau of Public Roads" (W. S. Holt) 275
"Business Cycles and Unemployment" (National Bureau of Economic Research) 275
"Capital and Steam Power" (J. Lord) .. 1027
"City Pavements" (F. S. Besson) 109
"Civilization and Climate" (E. Huntington), reviewed by X. H. Goodnough .. 1025
"Climatic Changes: Their Nature and Causes" (E. Huntington), reviewed by X. H. Goodnough 1025
"Domestic Sanitation and House Drainage (British)" (H. C. Adams) 484
"Doncaster (England) Regional Planning Scheme" (P. Abercrombie and T. H. Johnson) 110
"Earth and Sun" (E. Huntington), reviewed by X. H. Goodnough 1025
"Elasticity and Strength of Materials" (C. A. P. Turner); reviewed by George Paaswell 813
"English and the Engineer" (S. A. Harbarger) 648
"Estimating Building Costs" (C. F. Dingman) 483
"Everybody's Money" (E. McCullough); an engineer's brief for a stable dollar. 109
"Fine Arts, Significance of," (American Institute of Architects) 273
"From Immigrant to Inventor" (Michael Pupin) 813
"Germany's Capacity to Pay" (H. G. Moulton and C. E. McGuire) 484
"High-Pressure Reservoir Outlets: a Report on Bureau of Reclamation Installations" (J. M. Gaylord and J. L. Savage) 1026
"Hydraulic Principles Governing River and Harbor Construction" (C. M. Townsend) 273
"Hydraulics Applied to Sewer Design" (G. S. Coleman), reviewed by J. H. Gregory 814
"Industrial Democracy" (G. E. Plumb and W. G. Roylance) 646
"Kent's Mechanical Engineers' Handbook" (R. T. Kent) 648
"Manual of Information on City Planning and Zoning" (T. Kimball) 483
"Moteur Humain" (Jules Amar), reviewed by G. C. Whipple 273
"Motor Transportation of Merchandise and Passengers" (P. White) 110
"Office of Chief of Engineers of Army" (W. S. Holt) 814
"Platform Speaking" (G. R. Collins) reviewed by P. B. McDonald 812
"Prevention of Vibration and Noise" (A. B. Eason) 1027
"Railway Maintenance, Practical" (C. Weiss), reviewed by S. B. McConnell. 647
"Railways of Spain" (G. L. Boag) 1027
"Relativity and Space, Four Lectures on" (C. P. Steinmetz), reviewed by G. Paaswell 646
"Seagoing and Other Concrete Ships" (N. K. Fougner), reviewed by S. C. Hollister 1025
"Site Planning in Practice" (F. L. Thompson 274
"Text-book of Filtration: Industrial Filtration and the Various Types of Filters Used" C. L. Bryden and G. D. Dickey), reviewed by R. S. Weston 1026
"Towns and Town Planning, Ancient and Modern" (T. H. Hughes) 274
"Trade Association Activities" (L. E. Warford, R. A. May, J. Klein) 110
"Ventilation," report of New York State Commission 108
Boston, Mass., Metropolitan Planning Commission created 15
Box-car loader made from parts obtained from scrap pile j*688
Brakes:
Solenoid brake, quick-acting for crane service n*202
Westinghouse brake for European railways 896
Brazil road work organized n244

BRICK

Importation of brick and cement increasing n*620
Standard size for common brick adopted by manufacturers n200
Tests. (See U. S. Bureau of Standards.)
Varieties reduced to two standard sizes. n121

BRIDGE ABUTMENTS AND PIERS

Abutments, using a bridge to brace its abutments ("X") 1 359
Bronx River bridge abutment held by girder brackets (A. G. Hayden) *112
Rigolets bridge, Louisiana, pier construction 795

BRIDGE ACCIDENTS

Highway bridge troubles e830
Highway bridges, protecting from colliding vehicles (E. F. Kelley) *892
Morris Canal bridge, Jersey City, N. J., wrecked by overloaded truck n*614
Railway, Cole Creek, Wyo., rains destroy trestle, wrecking Burlington train n571
Stockton, N. J., fire destroys old wooden bridge (C. A. Mead) *272
Tall unbraced timber posts cause falsework failure *16
Wapakoneta, Ohio, 40-year-old bridge destroyed by colliding automobile .. n78
Bridge construction, Delaware River. (See Bridges, Philadelphia-Camden.)

BRIDGE DESIGN

Bear Mountain bridge design attacked as ugly e126, *156
Engineers for bridges e251
Pittsburgh, Pa., architects' design (three Allegheny bridges) again under discussion n155
Dispute initiated by architects n195
Strain-gage used to check bridge reinforcement 19
Bridge erection falsework, timber posts, tall, unbraced, cause failure *16

BRIDGE FAILURES

Bascule bridges, demonstrated danger, failures at Sault Ste. Marie, Mich., and Montreal e872
Cowlitz County, Wash., county liable .. n860
Lachine Canal bridge, Canada, bascule counterweight falls, drops bridge .. n861
Morris Canal bridge, Jersey City, N. J., failure caused by collision n778
Schenectady-Scotia bridge falsework gives way, five killed n*487

BRIDGE FIRES

Cimarron River bridge, Guthrie, Okla.. n33
Fort Madison, Iowa, A. T. & S. F. Ry. bridge n33
Springfield, Mass., North End bridge destroyed by fire n449, n*488. (See Bridges, Springfield.)
Stevens Point, Wis., six-span bridge destroyed by burning of timber floor .. n32
Bridge removal:
Santa Fe Ry. moves six bridge spans 43 ft. endwise j*152

BRIDGES

Approaches, capacity standards for motor traffic e210
Arch:
Watertown, N. Y., solve complicated river crossing with double-deck bridge (E. H. Harder) *542
Bascule:
Bending action in bascule bridge counterweight failures "Bridge Engineer" .1 1069
Lachine Canal, Canada, bascule counterweight falls, drops bridge n861
Mystic, Conn., bascule bridge of new type and its construction (R. E. Brown and W. G. Grove) *374
Bear Mountain, design attacked as ugly .. *156
Belle Isle bridge opened n905
Bronx Parkway bridges tested by heavy loads (A. G. Hayden) *934
Cantilever:
Ohio county highway, cantilever bridges of concrete (P. M. Henry) .. *191
Carquinez Strait bridge. (See Bridges, San Francisco Bay.)

*Illustrated; a, abstracts; e, editorials; j, job and office; l, letter; n, news

Chicago, Ill., lift-span bridge, Halsted St., repairing 925
Chinese bridge, bids wanted n660
Columbia River bridge tolls 722
Concrete:
  Cantilever bridge of concrete, Ohio intercounty highway (P. M. Henry) .. *191
  France, two reinforced-concrete bridges, Vesubie River, and Nantes (W. L. Scott) *916
  Lackawanna R.R., two precast concrete bridges (M. Hirschthal) *384
  Maintenance, low, an asset, versus steel e584
  Precast concrete units used for English footbridge j*1063
  Sidney, Ohio, strength specifications for large concrete bridge e580 (J. B. Huntley) *586
  Watertown, N. Y., solve complicated river crossing with double-deck bridge (E. H. Harder) *542
Delaware River. (See Bridges, Philadelphia-Camden.)
Eyebar-chain suspension bridge, Florianopolis, Brazil *592
Girders. (See Girders.)
Golden Gate. (See Bridges, San Francisco Bay.)
High Bridge to be reconstructed, not destroyed e1, n30
Highway:
  Railroad car sills and ties, bridge built of (C. Tappan) j*235
  Specification standards, three societies, art and craftsmanship e830
Hudson River bridge, army engineers hear plan for n363
Hudson River, new bridge project for New York City n1072
Kansas, low-water bridge built (C. O. Boynton) j*608
Lake Worth, Fla., $175,000 more asked. n450
Low-water bridge built in Kansas (C. O. Boynton) j*608
Ohio River at Louisville, municipal toll bridge proposed n1034
Palestine, bridges antedating Christian era still in service *177
Philadelphia, South St. bridge opened n861
Philadelphia-Camden:
  Anchorage construction plant .. e459 *460
  Cables, bids and contract .. n322, n404, n532
  Steel erection begun n*241
  Steelwork, bids received n195
Pittsburgh, Pa., architects' design (three Allegheny bridges) again under discussion n155
  Dispute initiated by architects n195
Plaza plans, Jersey City, N. J., presented by aid of model *306
Pontoon. (See Bridges, Springfield, Mass.)
Portland, Ore., plans for two new bridges n322
Railing, concrete, expansion details (O. W. Gatchell) j*520
Railing, concrete, on Montreal park bridge *477
Railway, cast-iron bridge and trainshed on British railway replaced *565
Raritan River bridge, Perth Amboy, N. J., bids rejected n573
Rigolets bridge, Louisiana, built to withstand hurricanes; Louisville & Nashville R.R. *626
  Pier construction 795
St. Paul, Minn., river bridge at new Ford plant 305
San Francisco Bay:
  Carquinez Strait bridge, first concrete piers poured n613
  Golden Gate, bridging e86
  Permits granted for two bridges n527
Springfield, Mass., North End bridge destroyed by fire n449, n488
  New bridge authorized n734
  Pontoon bridge not suitable n821
  Red tape and a pontoon bridge e540
  Steel bridge to replace burned structure n861
Steel, maintenance of, concrete versus steel e584
Suspension:
  South America, Florianopolis, Brazil, large eyebar-chain suspension bridge. *592
  Temporary use on hydro-electric plant, Gorham, N. H. j*523
Tournelle bridge, Paris, rebuilding as flood protection measure in Seine River *673
Vancouver, B. C., second Narrows bridge, contract let n241
Wateree River, S. C., river and swamp crossing completed n*281
Wilmington, Del., concrete memorial bridge has attractive appearance *96
Wooden bridge, old, heavy loads carried over (E. C. Seibert) j*441
British. (See Great Britain.)
Bucket loaders, tractor mounting for n*121
Buffalo, N. Y., garbage piggery and residue drying cheapest e458, 479

BUILDING CONSTRUCTION

Construction gallery, sightly, protects sidewalk, Straus Bldg., Chicago j*1063
Girders, 68-ton, transporting, for Straus Bldg., Chicago j*523
Methods, primitive, on small jobs e498
Seven plants fabricate steel for Chicago building, of S. W. Straus & Co. *794
Shoddy building work reviewed (J. B. French) l1068
Steel frame buildings, new method of placing column shoes j*71
Summer conditions simulated for winter construction, Saranac Lake clubhouse. j*72
Window sash, counterbalanced, for industrial building n*867

BUILDING DESIGN

Cut building cost and increase floor space by study of plans 343
Rose Polytechnic Institute new, Terre Haute, Ind. *351
Storage warehouse, Washington, D. C., has unusual design (S. T. Smith) .. *633
  Correction 727
Truss supports for cantilevers of theater balconies *193

BUILDING FAILURES

Binghamton, N. Y., school building of brick and tile fails n*528
Building accidents and their prevention, report of Am. Soc. C. E. committee. e85, a88
Chicago Union Station, headhouse, steel erection derrick falls n*615
No progress against bad building e960

BUILDING LAWS

Chicago, Ill., Freight limits for buildings 837
Floor load requirements, variations in .. 255
Height restriction (A. H. C. Shaw) l113
Heights of buildings, limitation by law .. e45
Hoover committee on seasonal building organizes n163
Public buildings bill, Washington, D. C., before Administration n449
Subways and building heights (B. F. Affleck) l277

BUILDING MOVING

Houses barged across Kanawha River .. j609
Los Angeles hotel moved to new site ... j*314
Narrow-gage tracks used in moving houses to new location, Hagerstown, Md. (E. G. McGill) j*314
Office building, 7,500-ton, Chicago, Ill., moved to provide for stree. extension j*771

BUILDINGS

Concrete:
  Graumann's Theater in Los Angeles, huge concrete girders and trusses el, (R. C. Mitchell) *4
  Ice house wrecked by overturning ice due to flood (C. W. Lusk) *18
Craftsman type architecture for industrial buildings j*233
Crystal Palace, London, old cast-iron frame strengthened by steel framing .. *65
Office buildings, space-saving office partition n*909
Rochester, N. Y., compares three types of school buildings (A. R. Reilly) *880
Theaters:
  Knickerbocker theater, Washington, D. C., wins three damage suits n945
  Los Angeles, Calif., Graumann's Theater, huge concrete girders and trusses el, (R. C. Mitchell) *4
Bulb, electric, theft-proof n*368
Bureau of Standards. (See U. S. Bureau of Standards.)
Business, Judge Gary, address on "What's ahead in business?" n736

C

Caissons, concrete:
  Manchester ship canal to be closed against floating oil by concrete caisson (R. F. Mundorff) *171
  San Francisco Bay, China Basin, concrete caissons sunk in place for wharf and seawall (F. G. White) *252
California, highways and public works separated n116

CAMPS

Bunkhouse sterilizer uses live steam and creosote oil j*520
Indictments. (See Contractors, war camp suits.)
San Joaquin River, Calif., construction camp built on canyon walls j317
Sanitation of camp site in Wisconsin 377
Sheets and pillow slips e540
Canadian Good Roads Association, meeting. 14

CANALS

Concrete caisson to close Manchester ship canal against floating oil (R. F. Mundorff) *171
Intercoastal, Corpus Christi, Tex., to unify segments 96
Intercoastal canals, Gen. Goethals to report on n239
Manchester ship canal, England, concrete caisson to close canal against floating oil (R. F. Mundorff) *171
New York Barge Canal:
  Water diverted to be measured n1033
New York Canals Bureau. (See New York State.)
Panama:
  Fender chains protect Panama lock ... 153
  Gaillard Cut, slide movement 1010
  Tonnage increases 566
  Traffic and tolls increase, not all profits e372
St. Lawrence ship canal, wanted by farmers e539
Sault Ste. Marie, increasing traffic 466
Sault Ste. Marie and Welland, show tonnage increase 941
Syracuse, N. Y., to fill bed of abandoned canals 176
Car puller, electric, capstan n*67
Cars:
  Gas car, new type, for narrow-gage railway n*326
  Keep cars full loaded and moving e497
  Self-contained steam railway coaches .. 17
Cat-tails, elimination from reservoirs 509
  More about cat-tails (W. F. Lockhardt) . l612
  (See also Reservoirs.)

CEMENT

Alumina Cement in France e329, (E. C. Eckel) *347
Cement Manufacturers Protective Association dissolved n697, e703, 736
Committee on cement, American Society of Civil Engineers, suggested e583
Dealers' profits on cement to large users (O. T. Reece) l567, 1859
Defense of cement supply man (E. K. Cormack) 1692; (J. Brobston) 1730
Foreign cement, "dumping" to be investigated n826
Future requirements of cement, A.S.T.M. discussion (P. H. Bates) 552
Importation of brick and cement increasing n*620
Oil-well water, effect on cements 633
Portland Cement Association investigator sent to Japan n658
Prices, and 7.3 per cent income on investments of companies e371, n407. (See Cement, dealer's profits; and Cement, defense of supply man.)
Selling cement by sack (L. T. Sunderland) 174
Tests. (See U. S. Bureau of Standards.)
Chamber of Commerce. (See U. S. Chamber of Commerce.)

CHICAGO, ILL.

Asphalt pavements, how examined (P. E. Green) 968
Building height limits 837
Calumet Harbor advocated for Chicago .. *15
Chicago River, plans for straightening .. n33
Elevated extension, Evanston and Niles Center n903
Grandstand at Chicago Ball Park, reconstruction *172
Hydraulic gradient in water tunnels, determination of *966
Illinois Central R.R. to start electrification n694
Laying large cast-iron gas main *310
Marking road routes through Chicago .. e457
Office building, 7,500-ton, moved to provide for street extension j*771
Railroad shopmen, order restraining in strikes made permanent n115
Rapid transit plan, express train service e126
Regional planning for 50-mile district .. n1034
Straus Bldg., seven plants fabricate steel for *794
  Transporting 68-ton girder j523
Terminal project, La Salle, Dearborn, Grand Central stations, consolidation .. n861
Transit, City Council plans unified system e87, a*104
Union Station:
  Building permit, $6,000,000, granted .. n489
  Forms double-end terminal *928
  Steel erection derrick at headhouse falls n*615
U. S. Senate committee views sewage disposal and waterway projects n819
Water-waste prevention started e583
Chicago Sanitary District:
  Order entered against diversion of water. n33
China, Relief Commission to construct utilities n905
Chinese coolies, not May-pole dance j*986
Cincinnati, Ohio, river terminal n862
Cinder Concrete Association, National, formed n575

CITY MANAGERS

City Managers Association, Meeting n906
Cleveland, Ohio, W. R. Hopkins named city manager n*994
Plainfield, N. J., city manager plan voted down n282
Stockton, Calif., C. E. Ashburner City manager at $20,000 ..... n34

CITY PLANNING

Boston Metropolitan Planning Commission created 15
Minnesota planning commission scheme started n1078
New Orleans, La., planning and zoning commission appointed n242
Zoning:
  Milwaukee zoning ordinance upheld by state court n1073
  New Jersey cannot zone against two-family houses n281
  New Jersey, Nutley zoning ordinance, part held unconstitutional n361
  New Orleans ordinance legal, says high state court n196
  Pittsburgh, Pa., Morris Knowles heads zoning appeals board n449
  St. Louis, Mo., reopening zoning case denied by court n946
  St. Louis zoning ordinance held invalid by state court n657
Clamp, safety, for wire rope n201
Clay (china) handled by conveyors at British port 719
Clay deposits, suspended track solves overburden disposal problem j*444

COAL

Federal Coal Commission. (See Coal, U. S. Coal Commission.)
Harding's death to affect coal situation .. n239
Moral suasion to cheapen coal e499
Pollution of water supplies by coal mine drainage, Pennsylvania (C. P. Collins) *38
Reserved coal lands, paying for e829
Stock piles control price e959
Storage:
  Detroit water-works, storage building for year's supply of coal *10
  F.A.E.S. active in pushing coal storage investigation n281
Strikes. (See Labor, strikes, coal.)
U. S. Coal Commission:
  Duty in coal strike e371
  Report on anthracite mines .. e47, n75, e165
  Review of general recommendations .. 984

*Illustrated: a, abstracts; e, editorials; j, job and office; l, letter; n, news

Urges supervision of industry by Interstate Commerce Commission.....n529
Who gets the dollars?.....e457
Cofferdams:
Benton Harbor, Mich., crane excavates and builds cofferdam for filtered water basin.....j*315
Coffin, C. A., gold medal awarded to General Electric Co.....n733
Cold storage:
Washington, D. C., cold storage warehouse has unusual design (S. T. Smith).....*833
Colombia, S. A., recent railway location (F. R. Molther).....*268
"Commerce Yearbook." (See U. S. Chamber of Commerce.)

CONCRETE
Alkali, effect on concrete, A.S.T.M. discussion (G. M. Williams).....a56
American Concrete Institute meeting to emphasize progress in concrete....e1041
American Society for Testing Materials, results of some researches in concrete.....a*142
Atmosphere, effect of, on concrete, A.S.T.M. discussion (P. J. Freeman)..a54
Behavior of concrete, discussion at meeting of A.S.T.M.....e46, 52
Borers not active (J. C. Witt).....l 523
Breaking up old concrete by hydraulic pressure (Maj. Johnstone-Taylor)...j*443
Cinder Concrete Association, National, formed.....n575
Cores, height measured by device (G. W. Hutchinson).....j*690
Curing. (See Highway construction concrete.)
Filtered sprinkling water used to avoid iron stains, University of Illinois stadium (G. C. Habermeyer).....j*985
Mass concrete in service, A.S.T.M. discussion (A. P. Davis).....a56
Motorcycle track, concrete, in Prague...*137
Piers:
Frost action in heaving concrete piers (L. D. McCready).....l*360
Pipe elbow, concrete patch withstands heavy wear.....j*148
Poles, concrete, for large Swedish transmission lines (F. A. Brackmann)..*136
Railway ties of concrete used in India..403
Sea water, effect of, discussion at A.S.T.M. meeting (S. C. Hollister)...a55
Shed protects railway track from mud slides, Southern Pacific R.R., California.....j*610
Slump tests, religion and drinking water (E. Godfrey).....l739
Station platforms, concrete units for....*151
Swimming pool, Midland Beach, New York, inadequate design causes failure *383
Tank, concrete, leaks repaired in tank subjected to external water pressure (R. W. Horne).....j*444
Tests, Core-drill tests of concrete roads, conclusions from (R. B. Gage).....*226

CONCRETE AGGREGATE:
Blast furnace slag as an aggregate in concrete.....a146
Concrete aggregate produced from local deposits (J. A. Garrod).....*1012
New word wanted for concrete aggregate (W. D. Browning).....l 447

CONCRETE CONSTRUCTION:
Cement protected from weather by tent placed with derrick.....j*73
Steady output 400 cu.yd. per day, Jones Island, Milwaukee.....j691

CONCRETE FORMS:
Cellar built without formwork.....j989
Metal clamp for concrete column forms saves cost and time.....j*70
Steel forms successful on concrete job, Hupp Motor Co., Detroit (R. C. Reese).*302
Wood working machine, portable.

CONCRETE MIXERS
Additional mixer standards approved by A. G. C. committee.....n120
Associated General Contractors, canvass of opinion of need of 21-E concrete mixers.....n160
Boom, 50-ft., on concrete mixer.....j315
Low headroom in city work, paving mixer designed for.....n*783
Mixer chokes on contractor's 1:2:5 charge n699
Mounted mixer saves time for contractor, Lansing, Mich.....j*853
Paving contractors endorse 13-E mixer..n535
Portable building mixer, two new models.....n*162
Rating plates for standard mixers.....n*699
"Shaker," light, hand-operated mixer..n*700
Skip guard on paving mixer prevents accidents to crew.....n*998
Standards discussed at meeting under auspices of A. G. C.....n36
Tilting mixers discussed at conference of A. G. C.....n244
Standards adopted.....n324
Trailer mounting for mixer.....n*454
Valve, new balanced three-way, for 21-E paving mixer.....n*619
Water measuring tank for concrete-mixers.....n*407
Concrete mixing, proportioning:
Laboratory to field.....e584
Proportioning and mixing, discussion at A. S. T. M. meeting (R. B. Young)... a54

CONCRETE REINFORCEMENT
Self-supporting reinforcement for concrete floors.....*921
Steel, quantity used, inspection from the outside.....e498
Swimming pool, open air, at Camp Dodge, Iowa (L. N. Hintgen).....*518

CONCRETING:
"Duckboards" handy for building concrete buggy runways.....j72
Placing equipment, pneumatic, infringement on patent claimed.....n909
Pouring concrete from dump buckets...j*987
Connecticut to spend $2,000,000 on roads in next two years.....n652

CONSTRUCTION
Construction Show, why not?.....e704
Costs:
Breed law, California, requires day-labor costs.....e165
Engineering charges on municipal improvement work.....193
France.....677
Elevating conveyor on sewer job saves labor of four men.....j*986
Equipment:
Builders shun proper equipment, says manufacturer.....n618
Lubrication of construction equipment n80
Mining congress, construction equipment.....n618
Mobile construction equipment.....e415
News-Record contracts, building equipment required.....a661
Service equipment economies.....e459
Wheels, rubber-tired, for construction equipment.....n*619
(See also Equipment and Materials.)
Force account:
Public work by day labor, can we do best? e913. (L. G. Holleran, P. Brown, C. H. Paul).....937
Hump switch yard for Southern California Edison power house construction job.....j*234
Los Angeles, Calif., Graumann's theater, huge concrete girders and trusses el. (R. C. Mitchell).....*4
Material-handling equipment to be shown at Power Show, New York City.....n909
Materials:
Economizing materials storage space in building construction (H. S. Hines).j687
Materials rehandled too much.....e458
Tardy orders for supplies upset building schedules (E. Doscher, L. J. Wilhartz, G. F. Hodkinson, R. A. Steen, M. L. Edelman, C. A. Anderson, A. T. Hogg).....n866
(See also Materials.)
More projects in 1923.....n661
Movie machine to make continuous construction record.....j*689
National Construction Week advocated (A. P. Greensfelder).....l 944
Quantity progress profiles, H. S. Martin. 1071
Rail delivery records needed.....e457
Seasonal:
Appeal to builders to buy out of season.....181
Hotel, 14-story, of reinforced-concrete built in winter months.....j*986
New York Building Congress discusses winter building facts.....e1041
Seasonal building, questions.....e167
Winter building is practicable and profitable.....e913, 942
Winter-work records wanted.....e624
Supplies, time saved for buyer by organized sales methods.....n*574
Construction News, Weekly tips for manufacturers.....n783
Construction plants:
Delaware River bridge. (See Bridges, Philadelphia-Camden.)

CONTRACTING
Bids:
A. G. C. committee studying bidders' responsibilities.....n616
A. G. C. standard form of bid.....n31
Balanced bids—duty of the engineer (W. D. Howren).....l 194
H. Sears).....l 816
Overlooked items in estimating road work (H. H. Wilson) interview... 391
Time for preparing. More time needed (F. E. Van Slyke, H. W. Hosford)..n997
Is it too short? (A. H. McDougall, J. B. Kirkpatrick, D. B. Stokes) n908
Too little time allowed (C. G. Richardson).....n783
Unbalanced bids (E. T. Thurston).....l29
Bonds reform (E. M. Weakley).....l 944
(See also Bonds.)
Cement, contractors deny padded estimates.....n37
Federal building and construction contract form contains arbitration provision.....e289, n321
Function of.....e703

CONTRACTORS
Bids. (See Contracting, bids.)
Builders shun proper equipment, say manufacturers.....n618
Contractor's sign at Furniture Mart Bldg., Chicago.....j*1066
Highway:
State aids contractor locating road materials, Rhode Island (G. H. Henderson).....j*606
Rail delivery records needed.....e457
Responsibility of, determining (E. W. Bush).....793
Responsibility to be defined by A. G. C..e583
War camp suits:
Army camp builders demur to fraud indictments.....n651
Court decision.....e703
Must give bill of particulars.....n697
"Tarred with the same brush".....e249

CONTRACTS
Arbitration principle accepted by American Railway Engineering Association..n946
Bids. (See Contracting, bids.)
Court denies state can cancel road contract, California (P. R. Fratessa).....965
Bond reform.....e748
Federal contract law, e705, (G. A. Ramsey).....l 990
Improved road contracts again.....e663
News-Record contracts, building equipment required.....a661
Records, safety of, from fire.....e249
Superior, Wis., Water, Light & Power Co., contract cannot be invalidated....n946
Cooley, Dean M. E., resigns as F.A.E.S. president.....n656
Coolidge, Calvin, new president, "A prophecy?".....e209, e211
Message to Congress.....e961
Cork foundations to reduce vibrations of machinery.....n910

CRANES
Crane excavates and builds cofferdam for filtered water basin, Benton Harbor, Mich.....j*315
Crane handles 98-ton girder.....n700
Derrick-crane, movable, economizes space, Nebraska state capitol (D. R. Van Horn).....j*772
Gantry:
Batch boxes on road job, North Carolina, transferred by light gantry...j*521
Hamburg, Germany, improved gantry cranes for port (E. Krahnen).....*296
Locomotive shop served by 180-ton crane, M.-K.-T. R.R.....*762
Scale, all-steel, has 10,000 lb. capacity.n*122
Shovel, convertible from crane.....n*286
Culverts:
Railroad culverts, renewing.....j989
Railways culverts, renewing, report of American Railway Bridge and Building Association.....j774

D

Dallas, Texas, adopts electrically-controlled traffic signals (W. J. Powell).....j*856

DAMS
Air vibrations due to fluttering of water sheet over dams (F. I. Winslow).....*107
Apishapa dam. (See Dams, earth fill.)
Arch:
Deformations of arched dam (Switzerland) measured by triangulation..*63
Engineering Foundation committee to investigate.....755
Cisco, Texas, hollow dam with notable design features (F. W. Chappell and E. M. Urban).....*706
Concrete:
Copco dam. (See Dams, concrete, Klamath River project.)
Klamath River project, Copco dam, operating costs on grinder used to make sand from basalt (P. O. Crawford).....106
Decatur, Ill., reservoir project and geology (M. M. Leighton).....*264
Earth:
Apishapa dam, Colorado, failure.*257; e373; (J. E. Field, B. M. Jones and O. N. Floyd).....*418
Composition core-walls suggested by Apishapa dam failure (F. A. Noetzli).....l 817
Construction engineer on failure (C. V. Mann).....l 1029
One cause of earth dam failures (J. Ripley).....l 568
State engineer's statement (A. J. McCune).....l 900
Under pressure and the Apishapa earth dam (E. Godfrey).....l 447
Damaged earth dam repaired by hydraulic fill, model reservoir, Trinidad, Colo. (M. E. Bunger).....*674
Henshaw dam, San Luis Rey River, California, rapid construction (C. H. Richards).....*340
Study of soils required (A. L. Fellows).....l 776
Tests, critical, for earth dams with or without cores (C. S. Jarvis)...*731
Hell gate dam, Missoula, Mont., reconstruction to eliminate silt.....*1055
Merced River dam, construction started.n362
Mitchell dam, on Coosa River, construction of (L. V. Branch).....*500
Mormon Flat dam to perform regulating service.....934
Oklahoma City, water-works dam withstood June floods (A. S. Holway)....*292
Withstood record flood.....*724
Rock-fill dam for hydro-electric plant in Kentucky.....n279
San Pablo, Calif., survey fund, state allots $10,000.....n450
Tirso dam notable, height, economy, safety (F. A. Noetzli).....l 29
Wichita Falls, Tex., storage dam, fast hydraulic filling (A. S. Fry, R. A. Thompson, O. N. Floyd).....*1004
Davis, A. P. removal from U. S. Reclamation Service. (See U. S. Reclamation Service; and Societies, protests.)
Made engineer of East Bay district, San Francisco.....n573
Delhi Settlement, Calif., concrete pipe irrigation system (J. R. Jahn).....*464
Denver, Colo.:
Reconstruction of Sixteenth St. viaduct (Elsie Eaves).....*750
Water-works construction program....n777
Departments of federal government, reorganization. (See United States government.)

DERRICKS
Gin-pole and derrick lift heavy girder..j*691
Standpipe roof trusses used to make derrick.....j611

*Illustrated; a, abstracts; e, editorials; j, job and office; l, letter; n, news

Stiff-leg derrick and gantry crane economize space. Nebraska state capitol (D. R. Van Horn) j*772
Detroit, Mich.:
Engineering Society, Detroit, acquires new home n450
Rapid transit, report on lines e959, n994
Water-works:
Coal storage building for year's supply of coal *10
Screens, revolving, for low-lift pumping station, filters (T. A. Leisen) .. *14
Dish-pan reflectors are effective and economical j*444
Ditches, intercepting, on highway construction importance of (F. M. Balsley) ... j*150
Docks. (See Wharves and Docks, Dry Docks.)
Draft tubes, tests of five models for turbines *182
DRAINAGE:
Hydraulic tests of flop valves on drainage pipe outlets *1052
(See Irrigation).
Drawings which fold to letter size j525
Drilling and boring:
Gasoline hammer drill, new n*246
Rock drill users profit by manufacturers' policy of field service *738
Drydocks:
St. Johns, N. B., opens new drydock n864
Vancouver drydock work revived 266
Duluth-New York all-water service to be opened n156
Dynamite, how used in ice blasting j1065

E

Earth fill:
Morro do Castello, Rio de Janeiro, leveling and fill *558
Vancouver, B. C., Ballantyne pier, jet aids in sluicing material to fill on pier j*610
Earthquake, Japanese. (See Japan, earthquake.)

ECONOMICS
Crude figures misleading, speech of President Harding, Salt Lake City e125
Depreciation, I. C. C. to prescribe way of computing 519
Depreciation; a definition (C. Hansel) .. *181
Flimsy prophecies, on business e1043
Income tax returns show size of various industries n1076
Monopolies, valuing of e829
Moral suasion to cheapen coal e499
Sherman Act, restricting business information e1042
Tax economies, Secretary Mellon's plan .. e787
(See Taxation, Mellon's plan for reduction.)
Elevators, interlocks tests point way to greater safety n200

ENGINEERING
Amateur engineering again, bridge in California e290
Business engineering e748
Federal budgetary provisions for engineering services n991
Profession or business? (C. R. Young) 918
State engineering in the highway bridge field 344
Truth about civil engineering (radio broadcast) (F. C. Wight) 476

ENGINEERING EDUCATION
Attendance at engineering schools, analysis of a227
Building construction courses in engineering schools 394
Carnegie Foundation authorizes $108,000 to study engineering education n779, e788
Wickenden, W. E., to administer fund n*822
Co-operative engineering course, Northeastern University (C. S. Ell) ..... l 238
Many engineering graduates are needed in industry e787, *796
New York State engineering students barred from scholarships e873
Engineers may be eligible (A. S. Downing) ..... l 943
Specializing by proclivities e498
(See Society for Promotion of Engineering Education)
Engineering ethics:
A. I. C. E. Ethics Committee Case 21 .. 677
Codes, an experiment worth trying, Am. Soc. C. E. on investigation of violations e331
Engineering Foundation, committee to investigate arch dams 755
Engineering Literature. (See Book Reviews.)

ENGINEERING SOCIETIES
Convention contrasts, American Public Health Association e623
Co-operation, beginning again e747
Society co-operation, Am. Soc. C. E. .. e125
Public advisers, address to Western Society e1

ENGINEERS
Apprentices:
American Construction Council announces apprenticeship committee .. n947
Building trades, New York, plan apprenticeship courses n369
Principles formulated n906
How to get apprentices (J. B. Brower) . l 114
Seek apprentices in the field operations (T. F. MacDevitt) ..... l 194
Who restricts apprentices? e45
Bridge design, engineers for e251
Cabinet, United States, engineer in (Herbert Hoover) 294
Chinese engineer, S. W. Lao, prominent in flood protection work n*946
Exchange with Europe e583
Indictments and suits. (See Contractors, war camp suits.)
Latin-American road engineers may visit United States n653
Licensing:
Iowa Board of Engineering Examiners organized n240
New York State, scholarships restricted by licensing law e457
Pennsylvania licensing law declared unconstitutional e166, 180 (J. F. Robb) l318
Pinchot, governor, of Pennsylvania gets bill seeking repeal of license law 78
Reciprocal registration operates in twelve states n614
"Passion for straight lines," road in Biloxi, Miss. e165
Prize in New York City traffic problem contest won by A. S. Tuttle, engineer e415, n449
Promotion tests at Philadelphia, results of n321
Public service, engineers in (G. C. Love) l 401
Public service, engineers in, address of Col. A. A. Sprague, Chicago e788
Radio, engineering editors broadcast from New York n403
Reclamation Service, Director A. P. Davis, removal of. (See U. S. Reclamation Service.)
Registration. (See Engineers, licensing.)
Engines: oil engine, heavy, designed for low operating costs n*367
England:
British cenotaph, paving around, to be rubber n453
London to Birmingham high-speed motorway n281
Roads and London Traffic (P. Wooton) .. 926
(See also Great Britain.)
English Channel tunnel, again 645

EQUIPMENT AND MATERIALS
Adams, G. W., "Shaker" concrete mixer, light, hand-operated n*700
American Well Works, general purpose pumping unit n*784
Atlas Powder Co., all-year-round explosive n368
Automatic Machine Co., heavy oil engine designed for low operating costs n*367
Barber-Greene Co., mechanical loader for handling snow n494
Billingsley, P. L. Co., portable wood working machine cuts cost of forms n*659
Bucyrus Co., new ¾-yd. shovel has rope thrust n*368
Chain Belt Co., portable building mixer, two new models n*162
Skip-guard on paving mixer prevents accidents to crew n*998
Chatillon, John, & Sons, all-steel crane scale has 10,000 lb. capacity n*122
Chausse Oil Burner Co., oil-burning tool and surface heaters for asphalt repair n*328
Chicago Bridge & Iron Works, floating roof for gasoline tanks n*826
Clyde Iron Works, hoist attachment for tractor n*826
Clyde Iron Works Sales Co., gasoline hoist with reversing elevator sheave .n*162
Crescent Truck Co., elevating platform truck n*740
Douglas Transfer Co., rubber-tired trailer for transport of heavy equipment .. n*286
Electric Tamper & Equipment Co., electric tie tamper n*1077
Foamite-Childs Corp., motor street cleaner has gutter-cleaning attachment n*81
Geneva Metal Wheel Co., rubber-tired wheels for construction equipment ... n*619
German metal-spraying process exhibited at Leipzig fair n*245
Gifford-Wood Co., electric capstan car puller n*37
G. L. W. Manufacturing Co., furring clip for wire mesh n*325
Greater Service Co., self-adjusting wrench n*700
Haiss, George, Manufacturing Co., improvements in creeper loader n*1037
Hanford, wheeled scraper and leveler built in three sizes n*368
Ingersoll-Rand Co., compact air motor hoist for 500-lb. loads n*660
Insley Manufacturing Co., one-man earth mover, tractor power n*998
Shank and bit punch n*575
Keuffel & Esser Co., reflecting hand level n*454
Keystone Steel & Wire Co., new rustproofing for wire n700
Koehring Co., new balanced three-way valve for 21-E paving mixer n*619
Paving mixer for city work designed for low headroom n*783
Korfund Co., cork foundations to reduce vibration of machinery n910
Kulp, Lester, theft-proof electric bulb .. *368
Lake Superior Power Co., track shifting machine n*325
Line Material Co., illuminated traffic control unit n*246
Los Angeles water department coats water pipe with asphalt n494
Lupton's Sons Co., steel sash improvement n*998
Mal-Gra Casting Co., safety clamp for wire rope n*201
Marsh-Capron Co., trailer mounting for mixer n*454
McMyler Interstate Co., crane convertible to shovel n*286
Mercury Manufacturing Co., internal-gear industrial tractor n*910
Monarch Tractors, Inc., crawler tractor makes long journey n*536
Self-anchoring stump puller n*536
Twin rotary snow plow n*908
Nelson Iron Works, tractor mounting for elevating bucket loader n*121
Nevada-California & Oregon Ry Co., new gas car for narrow-gage railway n*326
Northwest Engineering Co., ¾-yd. revolving shovel with one motor n*37
Orton & Steinbrenner Co., gasoline dipper shovel n*326
Osgood Co., new 1¼-yd. heavy-duty shovel n*201
Patterson, W. W. Co., large tackle blocks hand made n*659
Pennsylvania Gasoline Drill Co., new gasoline hammer drill n*246
Pennsylvania Pump & Compressor Co., light portable pump driven by air-cooled gas engine n*407
Peter Herkner Motor Trucking Co., truck-mounted crane kept busy n*245
Ransome Concrete Machinery Co., rugged construction a feature of 21-E paving mixer n*286
Seibel Air Spring Co., air spring seat for drivers of trucks or tractors n*162
Smith, T. L., Co., water-measuring tank for concrete mixers n*407
Stahl, Emil, trass, imported, available in United States n952
Stark Plow Co., V-shaped snow plow on tractor clears full width of road .. n*700
Stover Manufacturing & Engine Co., saw frame n*576
Templeton, Kenly & Co., one-man track jack n*868
Trail-Mobile Co., semi-trailer reduces idle time in haulage n*1038
Treadwell Engineering Co., new heavy duty hoists n*1077
Truscon Steel Co., inserts in concrete to carry angles supporting brick veneer n*1037
Westinghouse Electric & Manufacturing Co., highway lighting unit throws long beam parallel to road n*619
Whiting Corp., quick-acting solenoid brake for crane service n*202
Worthington Pump & Machinery Corp., rotary pump, gives continuous flow from deep wells n*868
Yale & Towne Manufacturing Co., roller-bearing I-beam trolley n*82
Europe, light ahead e703

EXCAVATING MACHINERY:
Bucket elevator useful in excavating basement j*69
Dragline, costs of excavation by U. S. Reclamation Service 69
One-man earth mover, tractor power .. n*998
Parsons Co., close contact with job aids design and operation. H. C. McCardell (interview) n*1036

EXCAVATION
Bronx Parkway, earth moving methods and costs (G. D. Clarke) *186
Yardage, finding, in circular excavation (W. F. Schaphorst) *523
Yardage, irregular areas in, problems solved by geometry (J. R. Jahn) j*609
Explosives:
All-year-round explosive n368
Liquid oxygen used in mine blasting, Colorado (E. D. Gardner) j775
Extensometer, optical-lever, of wide utility (L. B. Tuckerman) a266

F

Federal government:
Departments, reorganization. (See U. S. governments, departments.)
Federal Power Commission:
Report n862
Federated American Engineering Societies:
Co-operation, move toward n735
Fence standards, simplified, favored n406
Fire protection:
Fire hose towers protect camps despite heavy snowfall j*312
Water-curtain fire protection, Union Central Bldg., Cincinnati *972

FIRES
Berkeley, Calif., fire sweeps thirty-seven blocks n529
Theater, Wiesbaden, Germany, lessons from fire (Dr. E. G. Friedrich) *552
(See also Bridge fires.)

FLOOD CONTROL
Arkansas River, Pueblo, Colo., bluff plan for control approved n280
Flood protection plan adopted by Pueblo District (C. A. Bock) *48
Oklahoma City, how water-works dam withstood floods (A. S. Holway) *292, *724
Red River of the North, flood relief plans *122
Flood protection:
Yuma flood protection bill before Congress n1032

FLOODS
Mississippi River, effect of floods on waterway transportation e829, n863
Neuces River, Texas, delay caused by red tape (M. B. Hodges) ..... l 692
Oklahoma City, flood cuts embankment of reservoir n651
Water-works dam withstands record flood *292, *724
Floors, concrete reinforcement, self-supporting, for concrete floor *921
Flume, concrete, building in rough country (H. K. Fox) *20
Foreign projects of interest to Americans ... n660
Forestry:
Forest Products Laboratory gives course in use of forest products n244

*Illustrated; a, abstracts; e, editorials; j, job and office; l, letter; n, news

Forests prevent silting of reservoirs (W. W. Ashe) a307
Forms. (See Concrete forms.)
Formulas:
Areas, irregular, in yardage problems solved by geometry (J. R. Jahn) j*609
Logarithmic equation for friction losses in pipes (F. W. Greve) 605
Parabolic railway curves (L. Piérard) j610

FOUNDATIONS

Bank foundation designed to resist flood uplift, Mellon bank building, Pittsburgh (J. W. Pickworth) *712
Correction 941
Cork foundations to reduce vibration of machinery n910
Church foundation, Brooklyn, underpinned with slab footings (L. White) *66
Column shoes for steel frame buildings, new method of placing j*71
Frost action (G. Dahlberg) j*776
Motor-driven foundation hoists, small j*68
Philadelphia, Pa., undiscovered substratum of peat complicates Westinghouse foundation job *192
Piers:
Frost action in heaving concrete piers (L. D. McCready) j*360
"Sand hogs" or "sand braves," laborers on deep foundations (H. F. Dunham) ..... l 816
Soil tests essential to foundation design (H. Goldmark) ..... l 277
Temple, Bahai, Wilmette, Ill., composite foundations *842
Underpinning New York Public Library without shores (C. S. Rindsfoos) *510
France:
Armored concrete pavements *770
Bridges, reinforced-concrete, Vesubie River, and Nantes (W. L. Scott) *916
German labor in French building trades 605
Masons' apprentice school established 637
Paris, four refuse disposal plants (R. L. Willard) *844
French industrial situation, notes 337
Fuller, G. W., at London Institution of Sanitary Eengineers (H. C. H. Shenton) ..... l 612

G

Gage, tide. (See Tide gage.)

GARBAGE AND REFUSE DISPOSAL

Buffalo, N. Y., piggery and residue drying recommended e458, 479
Chances in garbage disposal, Wheeling, W. Va., and Sacramento, Calif. e1042, n1074
Disinfectant on garbage fills 560
Hoboken, N. J., court upsets garbage contract award n319
New York City:
New York garbage and Jersey beaches e372
Paris, France, four refuse disposal plants (R. L. Willard) *844
Sacramento, Calif.:
Paid for one-third weight-gain of garbage-fed hogs 181
Why garbage collection bills are presented by agents 307
Syracuse garbage reduction works reopened 377
Gary, Judge, address on "What's ahead in business?" n736
Gas mains, Chicago, Ill., laying large cast-iron main *310
Gas pipe. (See Pipe, gas.)
Gasoline:
Tanks. (See Tanks.)
Tax. (See Highway economics.)
Gassing of enginemen in railway tunnels 255
Geology and Decatur dam and reservoir project (M. M. Leighton) *264
Germany:
Berlin, deferrizing additional water supply e416 (G. M. Fair) *426
French building trades, German labor in 605
Girders:
Steel, reclaiming heavy plate girders Little Tennessee River railroad bridge j*773
Good Roads Show:
Committees named n658
Exhibit space allotted to 205 exhibitors n867
Exhibitors meet n453
Preliminary plans made for 1924 Road Show n284
Road equipment exhibitors must be Association members n492
Government:
Employees, public servants, number of e584
Ownership of Alaska R.R., operating deficit e165
State harbor control, port of San Francisco e209
Grain bins and elevators:
Montreal increases capacity of its grain elevators n322
Vancouver, B. C., new grain elevator n488
Grandstands:
Football stands, temporary, two collapse, scores injured e787, n819
Gravel:
Vancouver, B. C., Ballantyne pier, water increases delivery radius for gravel handled in chutes j440
Great Britain:
Clay (China) handled by conveyors at port 719
Rio Grande claim disallowed n945
Rio Grande reclamation project, British claim damage n693
Sanitary engineering practice, British a637
Grunsky, C. E., nominated as Am. Soc. C. E. president n319

H

Hammond, Ind.:
Tunnels, for sewer, under Calumet River. *59
Harbors. See Rivers and Harbors.
Harding, Warren G., death of, "A man departs" e209
Hawaii:
Railway trestle fails (B. F. Rush) *64
Highway administration:
Missouri highway department loses freight rate suit n78
Publicity by project signs aids Missouri road program *11

HIGHWAY CONSTRUCTION

Accounting for highway equipment j317
Balancing of quantities in highway grading, (F. M. Garnett) *1009
Bituminous:
Asphalt paving practice discussed at Denver conference (R. J. Randall) n367
Asphalt-penetration resurfaces old macadam streets in Bridgeport, Conn. *349
Asphalt, repairs, oil-burning tool and surface heaters n*328
Brick road on waterbound macadam base, with penetration curb, in Texas (H. C. Henning) *468
Macadam road smoothed by combining dragging with surface treatment (A. H. Hinkle) j312
Concrete:
Curing, calcium chloride and other methods, effect of (H. J. Kuelling) 466; (H. F. Clemmer and H. J. Kuelling) 1858
Double layer reinforcement for roads (R. Johnstone Taylor) j*71
Finishers and subgraders, making do best work (Lion Gardiner) n*949
Forms, setting on vertical curves for concrete paving (R. E. Behrens) j*233
Half-width construction affects use of finishing machine n406
Poured construction joints for concrete pavements (J. G. Bragg) j*687
Precast slabs, concrete road built of, as experiment, California *711
Progress and plant co-ordination, concrete road work (A. E. Page) *98
Reinforcement in concrete roads worth its cost e787, (H. E. Breed) 790
Sprinkler, street, used in curing concrete pavement (J. G. Bragg) j*69
Convict force of 102 men moved to new job n1073
Detours versus half-roads e329
Earth roads, Purdue University experiment (Ben H. Petty) *754
Four-way pavement constructed by two trips of mixer, Boston, J. J. Murphy *1053
Intercepting ditches, importance of (F. M. Balsley) j*150
Panama (R. C. Hardman) *594
Pavements. (See Pavements.)
Rails removed and paving restored, Everett, Wash. j525
State aids contractors in locating road materials (G. H. Henderson) j*606
State engineering in the highway bridge field 344
Subgrade, adobe makes stable subgrade e166
Woman succeeds as highway contractor in California n*240
Highway design:
Concrete parking strips on asphalt streets *185
Drainage across side roads j609
Safe roadway widths (G. F. Schlesinger) 74; (H. L. Towle) ..... l 154
Sledged-stone base developed for Missouri roads *295

HIGHWAY ECONOMICS

Bids, overlooked items in estimating road work (H. H. Wilson) interview 391
Detours, high cost of (J. E. Pennybacker) l114
Gantt charts for recording road maintenance costs (H. J. Friedman) *878
Missouri, planned publicity aids road program *11
Missouri, state supply of road-building materials e290
Motor-vehicle fees, computing (R. C. Barnett) ..... l 277
Roadbuilding a market for steel e416
Studies in highway traffic and finance e871, (J. G. McKay, G. E. Hamlin) a884
Taxation:
Motor taxes are building the roads e86, e584
Road taxes (1921 road costs) e539
What car-owners should pay for road building, e960, A. R. Hirst, 967

HIGHWAY MAINTENANCE

Earth shoulders, a remedy for wearing of (E. D. Fry) ..... l 360
Gantt charts for recording road maintenance costs (H. J. Friedman) *878
Ohio, costs of maintenance on concrete roads 65

HIGHWAY RESEARCH

Advisory board of National Research Council reviews progress n822
Bates Road tests do not apply to city streets (I. E. Houk) 399; (H. C. Adams) ..... l 650
Highway Research Board to hold annual meeting n733
Traffic and finance, studies e871, (J. G. McKay, G. E. Hamlin) a884

HIGHWAY SIGNS

Chicago, Ill., road route marking e457
Connecticut, advertising signs to be removed from highways 490
Dangerous warning signs e416
"Distant" signals at crossings (V. A. Eberly) ..... l 359
Mississippi Valley state roads, standard signs for 16
Publicity by project signs aids Missouri road program *11

HIGHWAY TRAFFIC

Accidents:
Six scalded to death when bus strikes concrete mixer, Nyack, N. J. n321
American Bar Association, group study of traffic e329
Bridge approaches, capacity standards for motor traffic e210
Capitalizing traffic congestion cost e747
Chart, self-reading, for traffic counts (J. L. Crane, Jr.) j*688
City cannot extend state traffic law, federal judge rules n195
Congestion costs (W. S. James) ..... l 943
Counting and weighing traffic, device for j*237
Engineers should control street traffic 641
Illuminated traffic control unit n*246
New York City traffic problem contest, A. S. Tuttle wins prize e415, n449
Safety:
National Highway Traffic Association committee recommendations 61
Spreading the gospel of traffic safety, float, Wayne County, Mich. j*688
Signals:
Dallas, Texas, adopts electrically-controlled signals (W. J. Powell) j*856
Speeding-up through motor traffic in towns e289
Studies in highway traffic and finance e871, (J. G. McKay, G. E. Hamlin) a884
Surveys in nine Tennessee counties (N. W. Dougherty) *546
Surveys of highway transport e872
Highway transportation:
New Jersey strike, joint operation of bus and trolley e330

HIGHWAYS

Accidents:
Automobile accident deaths increase 973
Roll of shame, 1922 motor car killings e1001
Bridges, protecting from colliding vehicles (E. F. Kelley) *892
Exploding brick pavement wrecks auto in Illinois n31
Publicity for motor accidents e249
Railway crossing accidents (C. A. Holden) ..... l 732
Railroad crossing accidents figures e372
Six scalded to death when bus rams concrete mixer, Nyack, N. J. n282
Advertising signs removed from Washington state highways 511
Alaska highway development by road commission e497; (J. G. Steese) *506
American Automobile Association to broadcast road information n569
Arkansas roads rediviva e705
Asphalt. (See Highways, bituminous.)
Biloxi, Miss., "a passion for straight lines" e165; (Ruth Canavan) ..... l 318
Bituminous:
Asphalt pavements, Chicago, how examined, (P. H. Green) 968
Asphalt-penetration resurfaces old macadam streets in Bridgeport, Conn. *349
Brazil, road work organized n244
Brick:
Waterbound macadam base for brick road, with penetration curb, in Texas (C. H. Henning) *468
Bridges:
State aid for bridges on state highways, listed by states 297
Bronx Parkway, earth moving methods and costs (G. D. Clarke) *186
Bureau of Public Roads, Photo-recording strain-gage e2
California starts subgrade survey e125
California, width and thickness to be added to roads n1031
Concrete:
A.S.T.M. discussion of behavior of concrete in roads (A. T. Goldbeck) a55
Core drill tests of concrete roads, conclusions from (R. B. Gage) 226
Connecticut to spend $2,000,000 on roads in next two years n652
Cornell to hold highway conference n994
Docks, street, for parking cars ("A. Nonymous") ..... l 359
English roads and London traffic (P. Wooton) 926
Federal aid for roads, task of present Congress e1042
Federal aid, seven years' road work 477
Good Roads Show. See Good roads show.
Great Britain, high speed motorway, London to Birmingham n281
Illinois nears 1,000 miles record of hard roads in year n695
Latin American engineers may visit United States n653
Lighting unit throws long beam parallel to road n*619
Macadam. (See Highways, bituminous.)
Mid-South, highway progress and problems:
Kentucky and Tennessee *228
Missouri *257
North Carolina and South Carolina *128
Virginia and West Virginia *168
New York State, non-partisan board selects new roads n904
Orient, notes on roads in e417, (W. W. Crosby) 437 .....
Pacific highway links contemplated n655
Panama, highway construction (R. C. Hardman) *594
Pan-Americans to inspect U. S. roads and transport n909
Pittsburg road, subgrade results in tests 141
Rubber paving, British experiments 18
Separate roadways for commercial trucks (A. H. Nelson) 729
Shoulders, earth, a remedy for wearing of (E. D. Fry) ..... l 360

*Illustrated; a, abstracts; e, editorials; j, job and office; l, letter; n, news

Small towns, state highways in ("Engineer") 1194
State highway officials review technical activities of 1923 982
Steam railroad tracks in paved streets, Philadelphia *139
Tennessee University to hold highway short course n1074
Tourist highways profitable, Wisconsin..e914
Truck sizes and traffic capacity a220
Wayne County, Mich., "modern" highway system e749
(See U. S. Chamber of Commerce reports)
Hoists:
Creeper loader, improvements in..... n*1037
Gasoline hoist with reversing elevator sheave n*162
Heavy-duty hoist, new n*1077
Tractor hoist attachment n*826
Hollow tile. (See Tile.)
Hoover, Herbert, the engineer in the Cabinet 294
Housing:
New York State Bureau of Housing and Regional Planning appointed 67, n321

HYDRAULICS

Concrete broken up by hydraulic pressure (Maj. Johnstone-Taylor) j*443
Kutter's *n* for rock channel excavated by explosives (C. E. Ramser) *936
Laboratory, New Jersey to use old canal plane n198
Regulated-flow duration curves, determining graphically (G. E. Lyon) j*236
Turbines. (See Turbines.)
Hunt, Robert W. death of e85

HYDRO-ELECTRIC POWER

Alaska, large power development planned n403
Blocking water power use e458
Colorado River, Arizona presents state plan to develop Colorado power..... n532
Columbia River, large power development proposed n864
Delaware River, two power developments proposed n1032
Federal Water Power Act interpretation delayed e249
Federal Power Commission. (See Federal Power Commission.)
Federal water-power permits, increase..n254
Founder Societies discuss power development n993
Green River, Wyo., power investigated by Department of Interior 1054
Hetch Hetchy power distribution question in limelight n490
Interstate water compacts, status of.... 505
Minnesota, power development at Duluth n615
Muscle shoals project. (See Muscle Shoals.)
Newfoundland to develop power and build paper plant n282
New Jersey to bring suit against Federal Power Commission on Morris Canal power issue n1033
New York state, power and the people, defeat of amendment e788
New Zealand starts development of its vast power resources n616
Niagara River, water diverted to be measured by Canadian and United States governments n241
Ohio River, Louisville Hydro-Electric Co. ceives permit to develop..... n362, n995
Ontario, 125-mile transmission line to Porcupine n361
Paradox of hydro-steam (G. H. Moore).. *354
Pennsylvania, Giant Survey Board to study power resources of Pennsylvania.n449
Pit River project, California Pit No. 3, construction under way n904
Publicity for proposed laws, defeat of New York State measure, W. F. Shaw, 1990
Quebec, North River, Laurentian Co., power project begun n696
Saguenay district, Quebec, power progress 545
San Joaquin River, diversion power project rejected n1032
Stave Lake, B. C., more power to be developed n695
Superpower conference, northeastern states, called by Secretary Hoover ... e623, n653
Tacoma revives Lake Cushman power project n1033
Tennessee headwaters, Hiwassee River, development proposed n947
Utah, applications for power sites conflict n490
White River, Arkansas, power projects..n320
World power conference planned for 1924 ..... n323

HYDRO-ELECTRIC POWER PLANTS

Alaska, Petersburg, license granted.... n903
Brazilian plant, some notes 263
California, Mokelumne River, in Stanislaus National Forest n903
Cherokee Bluffs, Ala., Alabama Power Co. to build 132,000-hp. plant on Tallapoose River n116, n321, n1033
Guadalajara, Mexico, Las Juntas power house, installing for Compania Hidroelectrica a Irragodora del Chapala... j989
Hudson River, International Paper Co. completes power plant *470
Hudson River, Moreau Manufacturing Co. plant above Sherman Island 227
Hump switch yard for Southern California Edison power house construction job j*234
Montreal, Riviere des Prairies development n907
Pit River Plant No. 1, California, surge tank and spillway *630
Rock-fill dam for hydro-electric plant in Kentucky n279
Switzerland, Lake Fully, hydro-electric plant with head of over one mile (F. A. Noetzli) *395
Tennessee power developments 231
West Virginia, Hinton, license granted...n903
West Virginia, 125,000-hp. plant proposed n404

I

Imhoff, Dr. Karl, visits America..... n449
Imhoff, half-day with Karl Imhoff (W. W. DeBerard) 686
Income tax, unwise taxing..... e872
India:
Concrete block ties on railways..... *511
Concrete railway ties used..... 463
Irrigation in 936
Railway ties, metal and concrete..... j691
Indianapolis, Ind., sewage treatment, progress and design features of plant, e250 (C. H. Hurd) *258
Industrial machinery, export ratios need study n*698
Industrial executives, interviews with (J. H. Jowett) n*738, (Los Gardiner) n*949, (A. C. Lehman) n*996, (H. C. McCardell) n*1036
Industry:
Barnes, J. H., cites production records of American industry..... n366
French industrial situation, notes..... 337
Situation shown by industrial expansion n*784
International Paper Co. completes power plant on the Hudson..... *470
Iowa sewage plant operators, meeting.... n777
Iowa water-works men discuss dozen topics n780
Iron:
Pig-iron production n38
Wrought iron fractures, crystalline areas in 431
Italy:
Irrigation and drainage progress since the War 9
New Department of National Economy, scientist heads 297

IRRIGATION

Colorado River project, hearing set for Sept. 24 ..... n404
Concrete pipe irrigation system, Delhi Settlement, Calif. (J. R. Jahn)..... *464
Cost of pumping water for irrigation use, items in (B. Dibble)..... 140
Drainage congress at St. Louis n992
Duty of irrigation water, theory and tests on (J. B. Lippincott, L. Crandall, B. A. Etcheverry, B. Dibble, A. L. Fellows, W. Gardner, and O. W. Israelsen) a642
Duty of water tests, more on (J Hinds)..1*817
Economical use of irrigation water based on tests (H. S. Clyde, W. Gardner and O. W. Israelsen) *548
Federal land reclamation:
Settlers' relief, reclamation advisers believe necessary n906
South and West unite to promote extension of reclamation e871, 897
Trial balance of reclamation e1002
Why reclamation costs differ from original estimates 1058
Federal land reclamation: a national problem
1. Origin, problems and achievements (F. H. Newell) 666
2. Development of the West under irrigation (C. E. Grunsky) 715
3. Agriculture on irrigated lands (C. S. Scofield) 756
4. Twenty years of reclamation (F. H. Newell) *801
5. After reclamation, organized land settlement (G. C. Kreutzer)..... *838
6. Difficulties and complaints of the farmer (H. H. Brook) 890
7. Financial troubles of the reclamation farmer and how they may be relieved (J. T. Whitehead)..... 924
8. Faults of reclamation law and practice, and their remedies, T. H. Means 977
9. The future of federal reclamation. (Hon. A. T. Smith) 1018
Ford engine used to operate Big Horn headgates (W. Arthur) j*234
Garden City, Kansas, project, why it failed (G. S. Knapp) 1 943, (F. H. Newell) 1 1030
Hydraulic tests of flap valves on drainage pipe outlets *1052
India 936, 981
Interstate water compacts, status of.. 505
Minidoka project, legal obstacles to extension removed n904
Reclamation conference at New Orleans, South and West unite to promote extension of reclamation n734, 897
Rio Grande project, English claim disallowed n945
Through the reclamation country (F. E. Schmitt)
Calexico, Calif. 798
Chicago 1023
Delhi, Calif. 766
El Paso 919
Grand Junction, Colo. 803
Hermiston, Ore. 636
La Junta, Colo. 970
Phoenix, Ariz. 887
Portland, Ore. 676
San Francisco 722
Washington, D. C. 566
Yuma, Ariz. 848
Verde River, District voted $23,000,000 bond issue n279
Water for irrigation, temperature of (E. C. Macy) 1 944
Western reclamation, appropriation $250,000,000 asked n945
What is the matter with reclamation? (F. G. Tracy) 1 858

J

JAPAN

American lumber manufactures to send commission to Japan n493
American machinery gains favor..... n453
American motor trucks shipped to aid Japanese restoration n658
Earthquake e371
Allied Machinery Co. staff safe..... n453
American Society of Civil Engineers committee to collect data on behavior of Japanese structure..e539, n571
Building resistance and earthquake characteristics, 1e1043 (R. E. J. Summers) *1044
Described by American engineer eyewitness (John W. Doty) n569
Design of earthquake-resistant buildings in Japan e457, *478
Engineering structures and services of Japan e415, *434
Government railways, earthquake damage (M. Nawa) *1047
How three American-built steel-frame structures withstood violent earthquake shocks e747, *768
Modern steel and reinforced-concrete structures survive Japanese earthquake e663, 678
Steel-frame and reinforced-concrete structures survive earthquake..... n527
Structural lessons learned from survey of steel-frame buildings after Japan's earthquake (W. S. Sample) 728
Electrical equipment orders exceed $1,000,000 ..... n658
Engineers, help for (J. A. L. Waddell)...1 401
Engineers, reference books for (A. M. Shaw) 1 612
Engineers, right way to help (F. Mauro).1 526
Reconstruction:
Building materials, buying of..... n453
Building materials admitted free until March 31, 1924 ..... n618
Expenditure, five years, $525,000,000.n945
Gigantic building program n534
Japan will be heavy buyer of equipment and materials n997
Lumber contracts awarded..... n867
Lumber, large American orders placed.n658
Lumber profiteering to be curbed....n452
Lumber, three billion feet will be required n660
Reconstruction Board, members named.n659
Tokyo organizes huge building company n826
Tripp, Gen. Guy E., honored by Japan.n*908
Joints:
Heel joints
Eccentric heel joint, solution (E. Godfrey) 1 568; (C. Weiss)..... 1 730

K

Kansas, low-water bridge built (C. O. Boynton) j*608

L

LABOR

Apprentices:
Building trades, New York, plan apprenticeship courses n369
French establish masons' apprentice school 637
How to get apprentices (J. B. Brower) 1 114
Building trades, labor difficulties up to building public e624
Who restricts apprentices?..... e45
Bethlehem Steel Co., employee representation report n201
Coal strike:
Coal miners strike as Governor Pinchot's plan fails..... n402
Coolidge, President, withholds policy on anthracite question n282
Has the public control?..... e289
Miners and operators agree on contract n448
Pinchot, Governor, of Pennsylvania, compromise settles strike....n363, e415
Day-laborer, costs required by Breed law, California e165
German labor in French building trades. 605
Railroad shopmen, order restraining in strikes made permanent Chicago, Ill..n115
Standardization, over-emphasis of e289
Twelve-hour day:
Public opinion wins, U. S. Steel Corp. favors abolition of 12-hr. day.... e45
U. S. Steel Corporation starts abolition of 12-hr. day..... n284
Unemployment, fining winter idleness..e539
Wages:
California A. G. C. protests building up wages 280
Real wages rising e249
Lakewood Engineering Co., new financing.n618
Lake Worth reservoir, Texas. (See Reservoirs.)
Levees:
Arkansas River, levees and drainage...n405
Lighthouses:
Power of lighthouses increases in 2,600 years 338
Ten years' progress in lighthouse engineering 346
Lime:
Bureau of Standards shows way to make better n493
Plaster "popping" caused by overburned lime 849
Lindenthal prize, European, to honor American engineer n364

*Illustrated; a, abstracts; e, editorials; j, job and office; l, letter; n, news

Locks:
Trent River, England, second lock completed ... 800
Locomotives, booster for, tested on Delaware & Hudson R.R. ... 13
London, Crystal Palace, old cast-iron frame strengthened by steel framing ... *65
Los Angeles:
Graumann's Theater, huge concrete girders and trusses el. (R. C. Mitchell) ... *4
Survey of port ordered by U. S. Engineers ... n155
Terminal Island breakwater, city holds out for ... 719
Wonder city of America (T. A. Rickard) ... *554
Water supply, Colorado River water considered ... n734
Lubrication of equipment ... n36, n80
Lumber:
Douglas fir, decay, reports on, by U. S. Department of Agriculture ... 590
Standardization adopted by national conference ... 590, n1076
Timber. (See Timber.)

M

Machinery, industrial, export ratios need study ... n*698
MacKenzie, Sir William, death of ... n*992
MacKenzie, Sir William (an appreciation). (H. K. Wicksteed) ... 1011
Madison, Wis., new sewage disposal plant ... n613
Manholes:
Jacksonville, Fla., saved money on manhole cover replacements (C. V. Imeson) ... j*690
Manufacturers oppose ban on trade statistics ... n782
Maps and mapping:
Logging railway system, large relief map used to lay out ... j442
New York City, aerial survey proposed ... n157
Shaded topographic maps developed by Geological Survey ... e371, *382
Topographic maps, shaded (H. W. Durham) ... l 526
Mare Island Navy Yard, quay wall reconstruction (A. W. Earl) ... *397
Marine borers:
Concrete borers not active (J. C. Witt) 526
Marks, Charles D., becomes emeritus professor at Leland Stanford ... n77

MATERIALS

A. S. T. M. new specifications and facts concerning materials ... 22
Failure of structural materials, observations on (G. Paaswell) ... 379
Rehandling construction materials ... e458
(See Construction, materials; Equipment and materials.)
Maybury, Sir Henry, invited to United States by highway officials ... n655
Melbourne, Australia, suburban railways, electrification ... *600
Metals:
Duralumin, electron, and manganese bronze, endurance tests, A. S. T. M. ... *a26
Slate, properties, tests by A. S. T. M. ... a27
Methane gas. (See Imhoff tanks.)
Mexico, recognition, effect on engineering ... e371
Mining congress, construction equipment at ... n618
Model, bridge plaza, Jersey City, N. J., plans presented ... *306
Morro do Castello, in Rio de Janeiro, leveling and fill ... *558
Mortar, fatigue of ... a142

MOTOR VEHICLES

Boston & Maine R.R., motor-car service suggested ... 51
New Jersey strike, joint operation of bus and trolley ... e330
Output big ... n1076
Tires, rubber, reclaimed, to be tested ... 382
Tractors. (See Tractors.)
Trucks:
Air-spring seat for drivers of trucks or tractors ... n*162
Chart shows trucks needed with mechanical and hand loading (W. H. Bosworth) ... n*200
Elevating platform truck ... n*740
Pennsylvania R.R. branch to use motor trucks for way-freight ... n1033
Semi-trailer reduces idle time in haulage ... n*1038
Separate roadways for motor trucks ... 729
Trailer, rubber-tired, for transport of heavy equipment ... n*286
Truck trailer carrying tools for waterworks emergencies ... j*152
Motor vessel use increases ten-fold ... 1008
Movie machine to make continuous construction record ... j*689
Moving picture shows construction of Straus Bldg., Chicago ... j691
Moving platforms, demonstration test, Jersey City, N. J. ... *922

MUNICIPAL GOVERNMENT

Akron, Ohio, transfers power of city manager to mayor ... n362
Portland, Maine, council-manager plan adopted ... n491

MUNICIPAL IMPROVEMENTS

Engineering charges on local improvement work ... 193
Sacramento, Calif., municipal utility district created ... n281
Service charge, for utilities, unpopular ... e46
Toronto faces large expenditure for improvements ... n361
Municipal treason, New York City port business ... e871

MUSCLE SHOALS

Ford bid ... n652, n905
Weeks suggests eliminating Gorgas plant in Ford bid ... n448
Gorgas steam power plant sold to Alabama Power Co. ... n531
Misinformation, on attitude of President Coolidge ... e871
Special privilege (to Henry Ford) ... e623

N

National Drainage Congress announces program for meeting ... n1074
National Exposition of Power and Mechanical Engineering, exhibit of material-handling equipment ... n909
National Highway Traffic Association, recommendations to increase safety of traffic on highways ... 61
National Safety Council, code of ... e497
Navigation, International Congress held at London (F. E. Chambers) ... 175
Negro migration, some problems ... e166
New England Water-Works Association:
Local vs. National society, decline of membership ... e497
Meeting ... 515
Progress and problems in field of water supply ... 515
New Jersey marginal railroad, a step ahead ... e541

NEW ORLEANS

City planning and zoning commission appointed ... n242
Louisville & Nashville R.R. cedes levee property to Dock Board ... n1072
Reclamation conference held ... n734, 897
Zoning ordinance legal, says high state court ... n196

NEW YORK CITY

Aerial survey proposed ... 157
Belt line, a step ahead ... e541
New York Central R.R. offers plan to solve West Side trackage problem ... n906
Port Authority:
Drinker, W. W., becomes chief engineer ... n531
Officers elected ... n196
Railroads to co-operate with Port Authority ... n572
Step ahead in a major problem ... e541
Port development:
Bankers plan to finance ... n364
Marginal line to be set up ... n863
Municipal treason, diversion of business ... e871
Progress in development ... n527
Public Library, decomposed rock under (J. F. Sanborn) ... l 692
Public Library, underpinning without shores (C. S. Rindsfoos ... *510
Sewage-works, Wards Island disposal, preliminary steps ... n364
Suburban traffic, D. L. Turner reports on ... n116
Subway articles reprinted for reference ... n695
Subway, Sixth Ave., to replace elevated railway ... n993
Subways, two new, to be built ... n239
Financing subway construction ... e1043
Traffic problem contest, A. S. Tuttle wins prize ... e415, n449
Transit Bureau ... n116
Transits, Joint board agreed on to inspect subway and elevated facilities ... n241
Unique two-level street obviates costly grading (H. W. Levy) ... j*853
Vehicular trunnels, two new, to be built ... n198
West Side Improvement, New York Central freight line, to elevate and electrify ... e914, n*947

NEW YORK STATE

Building Congress, arbitration law ... e829
Canals Bureau:
Green, F. S., to reduce personnel ... n860
Investigation ... n614, n818
Walsh, E. S., resigns as head ... n820
Housing, bureau of, and regional planning created ... 67
License law, engineers. (See Engineers, licensing.)
Public works department, Col. F. S. Greene, head ... n402, e416
Economy to be policy of department ... n402
Norfolk, Va., pipe line, allocating cast iron, wood stave, and concrete ... *62
North Sea car ferry ... 710

O

Ocean passenger traffic for half-year 450,000 ... 966

OIL STORAGE

Concrete tank, subjected to external water pressure, leaks repaired (R. W. Horne) ... j*444
Spherical steel tank, Tulsa, Okla., is novel structure ... j*988
Tanks, welded joints ... j*522
Oil-well water, effect on cements ... 835
Oklahoma City, Okla.:
Flood cuts embankment of reservoir ... n651
How water-works dam withstood floods (A. S. Holway) ... *292, *724

P

Paints and painting:
Aluminum paints reduce radiation. G. S. Burrell ... l 990
Railway painting program, all-year ... j773
Palestine, bridges antedating Christian era still in service ... *177
Panama, highway construction in (R. C. Hardman ... *594
Pan-Americans to inspect U. S. roads and transport ... n909
Paris:
Tournelle bridge, rebuilding as flood protection measure in Seine River ... *673
Partitions, space-saving, for offices ... n*909
Patents:
American designs copied abroad ... n367
Concrete placing equipment, pneumatic, infringement claimed ... n909
Trade name, Patent Office rules on ... n161

PAVEMENTS

Bates road tests and city streets (H. C. Adams ... j650
Chicago heavy-traffic street tests asphalt mixtures (H. W. Skidmore) ... *1060
Cities, present-day street and pavement practice (G. A. Crayton, P. L. Brockway W. P. Blair) ... a*894
Concrete:
Armored concrete pavements in France ... *770
Foundation depth, relation to strength, A. S. M. I. discussion ... a851
Grades, above 4 per cent, overcome by pulley and deadman (C. M. Hathaway) ... j775
Partial pavements for new subdivisions ... *227
Rubber, Manchester, England, experiments ... j775
Rubber pavement to be built around British cenotaph ... n453
Sheboygan, Wis., pavement undermined by large sewer withstands traffic ... *103
Templet, adjustable, to warp pavement (P. L. Fetherston) ... j*772
Pennsylvania:
Industrial waste pollution conference a success ... 678
Sanitary Water Board powers, duties and policies (W. L. Stevenson) ... a684
Penstocks:
Friction losses in large penstocks, test made, Pacific Gas & Electric Co., Pit No. 1 ... a*598
Ice as protection against ice in exposed penstocks (J. L. Underhill) ... j*68
Philadelphia:
Municipal loan, huge, authorized ... n655
Parkway tunnel under contract ... n279, n820
Port improvement, money to be voted on ... n488
Rapid transit agreement and plan ... n*196
Sesquicentennial fair, grounds and building committee, appropriation ... n320, n403
Plans suspended ... n1072
Sewage-works, first new unit, put in operation ... n779
Steam railroad tracks in paved streets ... *139
Stream pollution, engineers to confer on ... n451
Street widening proposed ... n241
Subway:
Arch St. subway work stopped by city council ... n448
Delivery-loop subway, construction resumed ... n77
Transit plans approved by voters ... n573
Westinghouse foundation, undiscovered substratum of peat complicates job ... *192
Piers. (See Columns; Bridge abutments and piers; Foundations; Wharves and docks.)
Piles and pile driving:
Cutting concrete piles with dynamite ... j237
Hammer rigged to follow pile down under water ... *225
Reinforced-concrete piles fitted with shoes and jets. H. J. Finebaum ... j*987
Seattle, Wash., deep water pile driving for bridge piers ... *1022
Pipe:
Copper and brass, exhibit shows durability ... n*122
Friction losses in pipes, new logarithmic equation for (F. W. Greve) ... 605
Gas, Standards Committee considers C.I. specifications ... n121
Water pipe coated with asphalt, Los Angeles, Calif. ... n494
Water pipe, heavy, placed by steam shovel ... j*608

PIPE LINES

Big Creek, Calif., Unstable soil, laying pipe in (McK. Maffit) ... *521
Cast iron, concrete and wood stave in pipe in (McK. Maffit) ... *521
Concrete, cast iron and wood stave in pipe line, Norfolk, Va. ... *62
Irrigation system of concrete pipe, Delhi Settlement, Calif. (J. R. Jahn) ... *464
Norfolk, Va., allocating cast iron, wood stave and concrete in a pipe line ... *62
Oak Grove, Ore., hydro-electric project, constructing pipe line 9 miles long ... j*1067
Panama Canal, laying pipe line under ... j525
Portland, Ore., Bull Run water supply line, conduit No. 3, contracts awarded ... n696
Wood stave, cast iron and concrete in pipe line, Norfolk, Va. ... *62
Pit River plant. (See Hydro-electric power plants.)
Pittsburgh, Pa., Zoning appeals board, Morris Knowles heads ... n449
Plainfield, N. J., sewage treatment and works. (See Sewage treatment: Sewage works, etc.)
Plaster, "popping" caused by overburned lime ... 849
Poles, concrete, for large Swedish transmission lines (F. A. Brackmann) ... *136

PORT AUTHORITY

New York. (See New York City, Port Authority.)
Portland, Ore., passenger joint terminal improvements ... e85, *94

PORTS AND HARBORS

Athens, Greece, Piraeus harbor, French firm gets contract ... n819
Calumet Harbor advocated for Chicago ... *15
Harbor congress debates Chicago water diversion ... n992
Los Angeles, Calif., survey of port ordered by U. S. Engineers ... n155
Mare Island Navy Yard, quay wall reconstruction (A. W. Earl) ... *397

*Illustrated; a, abstracts; e, editorials; j, job and office; l, letter; n, news

Port authority, port officials act on equipment design ... 177
Richmond, Va., seeks aid for port development ... n903
Soundings, simplifying taking of, under adverse conditions (E. B. Fauntleroy) ... j*771
Wilmington, N. C., demands a 30-ft. channel to the sea ... 630
Powder magazine made from old steel tunnel forms ... j*237
Power show, National Exposition of Power and Mechanical Engineering, exhibit of material-handling equipment ... n909
Prague, concrete motorcycle track ... *137

PUBLIC HEALTH

Engineer's responsibility in malaria prevalence, A.S.M.I. discussion (L. M. Fisher) ... n851
Rural whole-time health officer service. 189
Typhoid fever. (See Typhoid fever.)
Public Ownership League holds convention ... n489
Pueblo, Colo., flood control plan adopted by district (C. A. Bock) ... *48

PUMPS AND PUMPING

Centrifugal pumps, high efficiency developed (A. F. Sherzer) ... *561
Chicago, Ill., connecting new 60-m.g.d. pump) (M. C. Steuber ... 1483
Cranberry Marsh auger pump (Malde pump), (M. C. Steuber) ... 1486
Electric pumps:
Motor, electric, fitting to pump (R. H. Rogers) ... *824
General purpose pumping unit ... n*784
Low-head pumps, further discussion (E. F. Delery ... 1650
Malde screw lift pump (Cranberry Marsh Experiment Station) (M. C. Steuber) ... 1486
Portable pump, light, driven by air-cooled gas engine ... n*407
Rotary flow low-lift pump, new type (E. F. Delery) ... *230
Rotary pump gives continuous flow from deep wells ... n*868
Tully, N. Y., steel basin cut to admit suction pipes of pumping outfit ... j989
Turbine-driven pumps, lining up to kill vibration ... n*1076
Punch, shank and bit, Ingersoll-Rand Co. ... n6575

Q

Quartermasters' Association, National, Gen. R. C. Marshall, Jr., elected head ... n451

R

Radio, broadcasting:
American Automobile Association to broadcast road information ... n569
Engineering editors broadcast from New York ... n403
Truth about civil engineering. (F. C. Wight) ... 476
Rails. (See Railway Track and Track Work.)
Railway accidents:
Brooklyn, N. Y., elevated, no new light light on cause ... n30
Hawaii railway trestle fails. (B. F. Rush) ... *64
New York Central, Twentieth Century, at Forsyth, N. Y. ... e1002
Railway cars. (See Cars, Railway.)

RAILWAY CONSTRUCTION

Argentine-Chilean transandine railway, building (R. F. Maury) ... *332
Improvement programs of 1923, various lines ... e2
Railway improvements cost 1½ billions. 180
Tropical swamps, Honduras, 50-km. railroad built (F. R. Molther) ... *67

Railway location:
Colombia, S. A., recent railway location (F. R. Molther) ... *268

Railway curves:
Vertical parabolic curves simple formula solves. (S. J. Nichols) j*443; L. Piérard j610; (H. S. Martin) ... j775

Railway signals and train control:
Automatic train control needed ... 311
Automatic train-control test section works successfully ... n242

RAILWAY STATIONS

Chicago, Union Station forms double-end terminal ... *928
Concrete units for station platforms ... j*151
Philadelphia, Pa., steel canopy over Broad St. station being removed ... n158

RAILWAY STRUCTURES

Bridges. (See Bridges, railway.)
Concrete shed protects track from mud slides, Southern Pacific R.R., California ... j*610
Locomotive shop served by 180-ton crane: M.-K.-T. R.R. ... *762
Trainshed, cast-iron, and bridge on British railway replaced ... *565

RAILWAY TERMINALS

Chicago (See Chicago.)
Engine:
Design, capacity and equipment of engine terminals ... a424
Western Society of Engineers' suggestions for engine terminal improvements ... 92
Freight:
Denison, Tex., M.-K.-T. Ry. gravity freight yard ... *221
St. Louis, Mo., unification of railway terminals (C. E. Smith) ... 1238
Unification, Portland, Ore. ... e85, *94
Yards:
Gravity freight yard, new, at Denison, Tex., M.-K.-T. Ry. ... *221
Illinois Central R.R. yards, Chicago, nearing completion ... n77

RAILWAY TRACK AND TRACK WORK

Ballast:
Cleaning ballast, Santa Fe Ry., cost ... j524
Cost of cleaning by machine and by hand, Pennsylvania R.R. ... j*149
French railways, ballast sections ... 1021
Culverts. (See Culverts.)
Gage:
Irregular standard, e372, (C. Herschel) 1447
Jack one-man, for track work ... n*838
Passing tracks, improved location and equipment ... 400
Rails:
Monorail railroad to tap desert mine. *509
Renewing rails with small power crane ... j*316
Research, co-operative, mill men, railway engineers, Bureau of Standards. e915
Transverse fissures in steel rails, formation of, e704, (J. E. Howard, C. A. Morse, J. L. Campbell, C. R. Harding, J. M. R. Fairbairn) ... 720
Wheels and rails, relation of ... 263
Shifting machine for track ... n325
Steam railroad tracks in paved streets, Philadelphia ... *139
Ties:
Concrete block ties used in India. 463, *511
Creosoting practice on Indian railways. R. S. Pearson ... 1030
Electric tie tamper ... n*1077
Metal and concrete ties in India ... j691

RAILWAYS

Alaska R.R., government accounting ... e165
Landis, L. H., made general manager ... n616
Algoma Central & Hudson Bay Ry., relocation avoids large trestles and sharp curves ... *981
Australia, new North-South Ry. ... 792
Austria, reorganizing railways of ... 807
Belt lines:
Flint, Mich., belt line and industry district ... e1, *12
Boston & Maine R.R., motor-car service suggested ... 51
British railways, new engineering organization ... 517
Canadian Pacific Ry. completes two surveys across Rocky Mountains ... n450
Chesapeake & Ohio Ry. betterments $14,800,000 ... n242
Coal railroad, Virginia Ry. Co., Interstate Commerce Commission reverses decision against road ... n1031
Consolidation:
New England railway consolidation ... 508
Problems in Rail Consolidation (United States) ... e127
Transportation Act, opposition to amendment of ... n240
Construction road, Portland Railway, Light and Power Co., retention raises common-carrier issue ... n1034
Continuously moving railway tested, London ... 723
Cotton Belt Ry., sanitary engineering on ... 463
Electrification:
Brazilian railway to electrify 35 additional miles ... n403
Illinois Central R.R. to start electrification in Chicago ... n694
Melbourne, Australia, suburban electrification ... *600
South African railways, electrification 99
Forecast of situation in 1933 ... 896
French, Alsace-Lorraine railways, reorganization of ... 604
Great Britain, Great Western Ry., narrow-gage line ... 765
Highways used by railroads, Pennsylvania R.R. ... e1041
Honduras, building a 50-km. railroad through tropical swamps (F. R. Molther) ... *67
Hoover, Herbert, on the railroad problems. 976
Hudson River connecting railroad, new, will have no grade crossings ... n282
Illinois Central R.R. will start new line immediately ... n364
Illinois Central R.R. yards, Chicago, nearing completion ... 77
Kansas City Southern Ry., rehabilitation 564
Logging railway, relief map used to lay out system ... j442
Louisville & Nashville R.R., Rigolets bridge. (See Bridges, Rigolets.)
Missouri-Kansas-Texas R.R.:
Locomotive shop served by 180-ton crane ... *762
New gravity freight yard at Denison, Tex. ... *221
Monorail railroad to tap desert mine. *509
Natron cutoff, Southern Pacific Ry. to build ... n280
New York Central R.R., West Side Improvement, New York City, freight line to elevate and electrify ... n906, n*947
Niagara River, new railroad across ... n777
North & South Railroad Co. denied right-of-way across Salt Creek oil fields, Wyoming ... n904
North Carolina to build a state railway. *878
Oregon Short Line R.R. improves Idaho division ... *388
Pere Marquette, belt line and industry district, Flint, Mich. ... e1, *12
Philadelphia & Reading Ry., work progresses on Camden terminal ... n*1074
Record and a promise ... e789
Records, new, and increased efficiency. n822
Remaking the railroads ... e959
Retaining walls, precast concrete cribbing for ... *718
Roadmasters hold meeting in Chicago, n532, Track exhibits ... n535
Track exhibits ... n535
Southern Pacific to build Natron cutoff. n280
Southern Pacific to complete double track over Sierras ... n905
Suburban traffic, New York City, C. L. Turner reports on ... n116
Swiss rack-rail and cable mountain lines 278
Train control:
Booster for locomotive tested on Delaware & Hudson R.R. ... 13
Valuation:
Chicago & Northwestern Ry., tentative value given ... n363
Federal valuation of railroads in United States (E. F. Wendt) ... a189
Interstate Commerce Commission establishes new precedent ... n491
Virginian Ry., too big an undertaking. Interstate Commerce Commission reverses decision ... e1041
Washouts, protecting trains from ... e704
Westinghouse brake for European railways ... 896

RAINFALL AND RUNOFF

Montana streams flood flows or maximum runoffs. G. H. Ellis ... *1016
Oklahoma City, water-works dam withstands record flood ... 292, e703, *724
Predicting next year's rainfall for southern California (P. A. Ewing) ... 17
Rainfall of 12.76 in. in 4½ hr. at Beaumont, Tex. ... 63
Rain insurance, U. S. Weather Bureau aids 677
Rate-making; Atlanta gas rate case, clearer decision ... n322
Reclamation. (See Irrigation; and U. S. Reclamation Service.)
Red tape, another delay caused, Neuces River flood, Texas (M. B. Hodges) ... 1692
Regional planning:
Chicago, Ill., regional planning for 50-mile district ... n1034
New York State Bureau of Housing and Regional Planning appointed ... n67, n321
Reinforced concrete. (See Concrete; Concrete reinforcement; Bridges, concrete; Building construction, concrete; Dams, concrete; Highways construction, concrete.)

RAPID TRANSIT

Chicago, Ill.:
City Council plans unified transit system ... e87, a*104
Rapid transit plan, express train service ... e126
Detroit, Mich., transit benefit assessments e959
Moving platforms, demonstration test, Jersey City, N. J. ... *922
New York City, transit bureau, new ... n116
Philadelphia, Pa.:
Progress in rapid transit ... e87
Rapid transit agreement and plan ... n*196
Progress in cities ... e87
Sydney, Australia, rapid transit railway 645

RESERVOIRS

Austin and Lake Worth reservoirs, Texas, siltation in (J. B. Hawley) ... 811
Austin, Texas, reservoir loses 84 per cent of storage in nine years (T. U. Taylor) ... *380
Cat-tails, elimination from reservoirs. 509
Decatur, Ill., geology and dam and reservoir project, (M. M. Leighton) ... *264
Don Pedro reservoir, California, fills promptly ... n*362
Elimination of plants from, ("Philip") 1732
Forests prevent silting of reservoirs. (W. W. Ashe) ... a307
Hetch Hetchy, boating on ... 770
Oklahoma City, flood cuts embankment of reservoir ... n651
Waltham, Mass., reservoir waterproofed by a new lining (M. W. Fisher) ... 185

Retaining walls:
Crib, concrete, to prevent land slides, Illinois Central R.R. (K. L. DeBois) ... 1859
Cribbing, precast concrete, for retaining walls, for railway lines ... *718
New York City, Laurel Hill Terrace, retaining wall on fill of boulders. (H. W. Levy) ... *898
Richmond, Va., seeks aid for port development ... n903

RIVERS AND HARBORS

Calumet River, harbor advocated for Chicago ... *15
Chicago River, plans for straightening ... n32
Colorado, Birdseye party survey. (See Surveys.)
Colorado River, Girand development of Diamond Creek, Arizona Governor fails to extend license ... n862
Coosa River, constructing Mitchell dam. (L. V. Branch) ... *500
Essington channel deepens itself ... 230
Flushing Creek, Long Island, N. Y., U. S Engineers urged to improve ... 923
Hudson River:
Deeper Hudson advocated ... n736
International Paper Co. completes power plant ... *470
Humber river development well under way ... 350
Merrimac, 18-ft. channel subject of controversy ... n158
Mississippi, floods and waterway transportation ... e829, n863
Niagara River, new railroad across ... n777
Niagara, River, water diverted to be measured by Canadian and United States governments ... n*241
San Francisco, control of waterfront by state ... e209
Tombigbee River, army engineers report adversely on deepening ... n1073

*Illustrated; a, abstracts; e, editorials; j, job and office; l, letter; n, news

Warrior River, Ala., fail to get license to develop lock 17 ..... n614
Rivers and Harbors Congress, meeting.... n860
Rivets and riveting:
Gusset connecting, table for locating first rivet. j*313
Rochester, N. Y., compares three types of school buildings, (A. R. Reilly) *880
Rock, decomposed, under New York City. (J. F. Sanborn) ..... l 692
Roofs and roofing:
Prepared roofing, simplified..... n699
Rope:
Safety clamp for wire rope..... n*301
Wire rope, notes on care of..... n618
Rose Polytechnic Institute:
New building at Terre Haute, Ind..... *351
Wagner, Prof. F. C., new president..... n694
Rubber paving. (See Pavements, rubber.)
Rubber tires, reclaimed, to be tested..... 382
Ruhr deadlock e289
Russia, waterpower resources concentrated in Asia (I. Gutmann) 9

S

Safety. (See Accident prevention.)
St. Louis, Mo.:
Auditorium, legal right for city to build upheld n821
Engineers ask voice in expending huge bond issue n449
Unification of railway terminals. (C. E. Smith) n238
Water-main joint materials, three tested (L. Chivvis) *190
Water-works extensions bonds, $12,000,000 authorized. n946
Zoning case, reopening denied by court. n946
Zoning ordinance held invalid by state court n657
St. Paul, Minn., votes $5,500,000 bonds for waterworks and sewers n155
Sales combinations, Webb-Pomerene Act, move to amend n951
Sand, basalt, operating costs on grinder used. (P. O. Crawford) 106
"Sand hogs" or "sand braves." (H. F. Dunham) ..... l 816
SAN FRANCISCO
Control of waterfront by state e209
Davis, A. P., made engineer of East Bay district n573
Vehicular tube under Market St. n820
San Francisco Bay, China Basin, concrete caissons sunk in place for wharf and seawall. (F. G. White) *252
SANITATION
American Society of Civil Engineers, Sanitary Section e664
British sanitary engineering practice.... a637
Sanitary engineering on Cotton Belt Ry.. 463
Sash, steel, improvements n*998
Saw frame, Stover Manufacturing Co.... n*576
Scraper and leveler, tractor, built in three sizes n*368
Sea wall, concrete, Vicksburg, Miss., skill and responsibility required in bidders.. n403
Sea water, effect on concrete, discussion at A.S.T.M. meeting. (S. C. Hollister).... a55
Seattle, Wash., deep water pile driving for bridge piers *1022
Engineers club, new home n*489
SEWAGE DISPOSAL
Distribution tests with butterfly-valve control, University of Illinois. (H. R. King) *590
Indianapolis, Ind., device removes sand from gravel wells. C. K. Calvert.. j*1064
Madison, Wis., new sewage disposal plant n613
U. S. Senate committee views Chicago projects n819
Automatic sewage-flow regulator for intercepting sewer. (H. S. Phillips).. j*442
SEWAGE TREATMENT
Activated Sludge:
Air-pressure losses in piping of activated-sludge plants. (H. L. McMillan) *178
Alum an aid in filtration..... 1015
American Chemical Society discusses sewage and water supply n487
Chicago Sanitary District, Argo, Ill. activated-sludge tank under test. (L. Pearse) ..... l 238
Indianapolis, Ind., progress and design features of plant, e250. (C. H. Hurd) *258
Plainfield, N. J., test of acid in dewatering activated sludge. (J. R. Downs) ..... l 29
Direct-oxidation:
Austin, Minn., direct-oxidation process permitted e959, n993
Minnesota joins the list of disapproval e959
New Jersey Hirst-Potts charges are modified at hearing n157
Trenton, N. J., direct oxidation process again disapproved n198
Trenton, N. J., rejection of plans by New Jersey State Board of Health. "Promotion and ethics." e210
Filtration:
Novel type of filter, stream-line. (G. W. Fuller) 770
Imhoff tanks:
Alum shortens drying period of Imhoff tank sludge a*888
Methane gas from Imhoff tanks, utilization of. (Dr. Ing. K. Imhoff).. *512
Newton, Kan., mechanical agitation of scum in vent chamber *301
Plainfield, N. J., trial of acid in dewatering Imhoff-tank sludge. (R. H. Eagles) ..... l 194
Trenton, N. J. (See Sewage treatment, direct oxidation)
Worcester, Mass., City forces build Imhoff tanks and trickling filter. (E. R. Perry) *832
SEWAGE WORKS
Gate-valve forced off pump main, Natick, Mass. 591
Indianapolis, Ind. (See Sewage treatment activated sludge)
New York City, Wards Island disposal plant, preliminary steps n364
Operation:
Iowa sewage plant operators discuss problems n777
Making sewage plant work. e329
Phillipsburg, N. J., defendants in conspiracy case acquitted n197
Trenton, N. J., has until Aug. 1, 1925, to build sewage-works n279
Trenton, N. J., Hirst-Potts hearing n115
Worcester, Mass., city forces build sewage treatment works. (E. R. Perry).. *832
Sewer Construction:
Hammond, Ind.:
Intercepting sewers and siphon built. (J. B. Murphy) *58
Twin tunnels for sewer siphon under Calumet River *59
Sewer design:
Tunnels, twin, and sewer siphon built under Calumet River at Hammond, Ind. *59
Sewer systems, and districts. (See sewerage.)
Sewerage:
Los Angeles County, new joint sewer district formed n778
SEWERS
East St. Louis enjoins sanitary sewer excavation n30
Intercepting, automatic sewage-flow regulator. (H. S. Philips) j*442
Manholes. (See Manholes.)
Outlet for sewer through concrete dock. (D. H. Fleming) j*689
Passaic Valley outfall sewer tunnel contract rescinded n242
Suspended structure carries sanitary sewer over stream. (J. C. Keeley)..... j*148
Shaft sinking:
Rock shaft, New York City, taking care of water j691
Shaughnessy, Lord, death of n992
Sheets and pillow slips, in camps e540
Sherman law, sixteen companies fined for violations n782
Shovels:
Crane convertible to shovel n*286
Gasoline dipper shovel n*326
Revolving shovel, ¾-yd., operates with only one motor n*37
Revolving steam shovel, 1¼-yd. heavy-duty n201
Rope thrust on ¾-yd. shovel..... n*368
Steam shovel moves steel storage tank. j*689
Water pipe, heavy, placed by steam shovel j*608
Wood for own fuel broken up by steam shovel j441
Sidney, Ohio, concrete bridge, strength specifications for. (J. B. Hunley) *586
Siltation. (See Reservoirs.)
Simplified Practice, division of Department of Commerce, to hold conference n453
Sioux City, Iowa, street widened by moving concrete curb and gutter sections. (J. D. Adams) j*611
Siphons:
Hammond, Ind.:
Sewer siphons and twin tunnels built under Calumet River *59
Siphons and intercepting sewers built. (J. B. Murphy) *58
Hetch Hetchy project, building a 9-ft. siphon on the Hetch Hetchy aqueduct. (N. A. Eckart) *100
Slate producers investigate nailing problems n782
Slide rules:
Fourth scale for log slide rule. (C. S. Jarvis) j316
Slump tests, religion, and drinking water. (E. Godfrey) ..... l 730
(See Concrete.)
Smith, Grant, death of..... n*571
Smith, Grant: an appreciation, (M. J. Whitson) ..... l 612
Snow removal:
Mount Rainier National Park, steam shovel clears road n*245
Snow removal and road damages..... e250
Twin rotary snow plow n*998
V-shaped snow plow on tractor clears full width of road..... n*700
Society for Promotion of Engineering Education:
Education committee of American Society of Civil Engineers, appointed..... n1033
Soundings, simplifying taking of, under adverse conditions. (E. B. Fauntleroy).. j*771
South America:
Florianopolis, Brazil, large eyebar-chain suspension bridge..... *592
Spillways:
Pit River Plant No. 1, California, surge tank and spillway..... *630
Stadiums:
Count of football crowd, Ohio State University, gives hints on stadium design. C. T. Morris j985
Grandstand at Chicago Ball Park, reconstruction *172
Grandstands (See Grandstands.)
Indiana University, contract let..... n197
Standardization conference, Zurich, Switzerland n321
State engineering in the highway bridge field 344
Steam power:
Gorgas plant sold to Alabama Power Co. n531
Steel:
Designing steel details with attention to drainage. (A. M. Shaw) *606
Forms for concrete, buildings, etc., service policy of Blaw-Knox Co. A. C. Lehman n*996
Reinforcing steel, inspection from the outside, on contracts..... e498
Roadbuilding a market for steel..... e416
Steel forms successful on concrete job, Hupp Motor Co., Detroit, (R. C. Reese) *302
Steel industries plan exposition..... n285
Straus Bldg., Chicago, seven plants fabricate steel for..... *794
Tests:
Endurance of steel in tension, torsion and impact, e291. (D. J. McAdam) .a*298
Illinois report, second, on endurance, e291. (H. F. Moore and T. M. Jasier) *308
Welding. (See Welding).
Steinmetz, Dr. Charles P., death of..... e703, n*733
Stone, tests, (See U. S. Bureau of Standards.)
Strain measuring:
Optical-lever extensometer of wide utility, (L. B. Tuckerman)..... a*266
Strasbourg Cathedral, modern engineering to save tower 505
Stream pollution:
Philadelphia, conference of engineers on stream pollution..... n451
Street cars, tramway standards, old, removed j*525
Street cleaning, motor cleaner has gutter cleaning attachment n*81
Street lighting, A. S. M. I. discussion. (R. Toensfeldt, S. C. Rogers, L. A. S. Wood) a850
Streets:
Canterbury, streets in days of Henry VIII and Elizabeth 132
Sioux City, Iowa, street widened by moving concrete curb and gutter sections. (J. D. Adams) j*611
Two-level street obviates costly grading, New York City. (H. W. Levy)..... j*853
Structural design, trusses, trapezoidal portal and eccentric heel joint. (C. Weiss) ..... *339; correction 383
Structutral safety, American Society of Civil Engineers, New York section, committee.n695
Stump puller, self-anchoring..... n*536
Subways:
New York City, articles reprinted for reference n695
Two new subways to be built..... n239
London, accident on tube subway.... n1072
SURVEYS and SURVEYING
Colorado River, Stanton's expedition of 1889. (F. S. Odell) ..... l 902
Colorado River, survey by Col. Birdseye and party...n451, n532, n571, e787. *808
Level, hand, reflecting..... n*454
Measurements by eighths of an inch. (E. Fleming) ..... l 447
Texas topographic study begun by U. S. Geological Survey..... n404
Topographic, precise levels carried over large body of water..... j313
Swimming pools:
Midland beach, New York, inadequate design causes failure..... *383
Open air, at Camp Dodge, Iowa, (L. N. Hintgen) *518
Should pools be emptied in winter? Adams & Ruxton Construction Co.. l 858
C. D. Hale ..... l 1068
Switzerland, deformations of arched dam measured by triangulation..... *63
Sydney, Australia, rapid transit railway.. 645

T

Tackle blocks, large, hand made..... n*659
Tanks:
Gasoline tanks, floating roof for..... n*826
Oil storage; roof built first, in Belgium. j611
Oil storage, welded joints..... j*522
Spherical steel oil tank, Tulsa, Okla., is novel structure j*988
Steel storage tank moved by steam shovel j*689
Testing working models of ships, large tank for Germany (O. Colberg) *139
Tar cold patch, barrel and automobile license plates form mixer (J. S. Crandell) *153
Taxation:
Mellon plan for reduction. American Institute of Consulting Engineers urge reduction n1033
Write your Congressman e959
National Industrial Conference Board figures on taxes 965
Testing machines:
Accelerometer for measuring impact...a*28
Extensometer, distant reading..... a*27
Strain-gage used to check bridge reinforcement 19
TESTS AND TESTING
Concrete, researches of American Society for testing materials a*142
Impact on culverts on roads..... 11
Road. See Highways, Bates road, Pittsburg road.
Hardness, new method of testing..... *132
Ships, working models, large tank for testing (O. Colberg) *139
Theaters:
Wiesbaden, Germany, lessons from theater fire (Dr. E. G. Friedrich)..... *552
(See Buildings, Theaters.)

*Illustrated; a, abstracts; e, editorials; j, job and office; l, letter; n, news

Tide gage, portable, for temporary use (G. T. Rude) j*856
Tile:
Hollow building tile:
Number of sizes reduced n782
Tests. (See U. S. Bureau of Standards.)
Hollow-tile walls, compressive tests 753
Restraint of trade, tile manufacturers guilty n948
Timber:
Douglas fir, identification 429
New York timber tests, interpretation (G. E. Streban) 174
Responsibility for timber treating inspection (V. R. Covell) ..... l 816
Tower, Mediaeval, Strasbourg Cathedral, saved by modern engineering 505
Track, suspended, solves overburden disposal problem j*444
(See Railway track and track work.)
Tractors:
Caterpillar tractors, school program outlined n244
Crawler tractor makes long journey ... n*536
Internal-gear industrial tractor n*910
Trade associations:
Cost accounting, uniform methods suggested n493
Trade statistics, manufacturers oppose ban on n782
Transportation:
Chamber of Commerce reports 974
Pan-Americans to inspect U. S. roads and transport n909
U. S. Chamber of Commerce report n862
Trass imported, available in United States .. n952
Trestles:
Hawaii railway trestle fails (B. F. Rush) *64
Relocation avoids large trestles and sharp curves, Algoma Central & Hudson Bay Ry., Ontario *981
When to use a trestle, Burlington Ry. and floods e704
Tripp, Gen. Guy E., honored by Japan n*908
Trolley, roller-bearing I-beam n*82
Trucks. (See Motor trucks.)
Trusses:
Equilibrium maintained in truss by load on footings, Penn Square Bldg., Philadelphia, C. Carswell *1061
Heel joint of truss, simplified formulas for (W. H. Weiskopf) l 447 (E. Godfrey) ..... l 568
Trapezoidal portal and eccentric heel-joint of truss (C. Weiss) *339; correction 383
Truss supports for cantilevers of theater balconies *193

TUNNELS AND TUNNELING

Costs of tunneling, by day labor, in Chicago 927
English Channel, again 645
Florence Lake tunnel, dining-car train serves mid-shift meal to tunnel crew .. *1021
Gassing of enginemen in railway tunnels. 255
Mersey River, England, tunnel proposed. n*904
Moffat:
Bids present unusual details n615
Bids to be received Sept. 12 ..... n320
Contract, first, let on Moffat main and pilot tunnels n77
Contract for driving tunnel awarded to Hitchcock & Tinkler n532
R. H. Keays engineer of commission ... n115
Six-mile tunnel through Rocky Mountains *962
Ulen & Co. submits only bid n487
New York City. (See New York City.)
Passaic Valley outfall sewer tunnel contract rescinded n242
Philadelphia, parkway tunnel under contract n820
River Rouge, Mich., Ford Motor Co. to build large tunnel n615
San Francisco, Eureka Valley tunnel construction approved n362
San Francisco to have vehicular tube under Market St. n820
Severn tunnel, England, will not be abandoned 836
Turbines, hydraulic:
Draft tubes, tests of five models for turbines *182
Francis type waterwheels, study of vibrations ..... l 749, *764
Newport News Co. takes over Wellman-Seaver-Morgan Co. n782
Niagara Falls Power Co. puts in operation largest turbine, at Lower Gorge plant n1034
Vibration in waterwheels. H. S. S. Smith ..... l 990
Typhoid fever:
Chicago outbreak e1001
England, low typhoid death rate in 1922. 106
Franklin Furnace, N. J., final report on typhoid outbreak 429
Rockaway, N. Y., cross-connection typhoid outbreak 267
Typhoid fever a compensable accident ... 13

U

Underpinning:
Church foundation, Brooklyn, underpinned with slab footings (L. White). *66
New York Public Library, underpinned without shores (C. S. Rinaldoos) *510

U. S. BUREAU OF STANDARDS

Current structural research, cement, brick, hollow tile, stone *874
Explosion, dynamometer laboratory, four killed n527
Caused by gasoline leak n615
Instruments, Accelerometer for measuring impact 26
Extensometer, distant reading 27
Lime, way to make better, shown n493
Rail study, co-operative, begun e915
U. S. Chamber of Commerce:
Transportation, report on n862, 974
"Yearbook," statistics e913, n952
U. S. Geological Survey:
Birdseye party. (See Surveys, Colorado River.)
Colorado River. (See Surveys.)
U. S. Government:
Departmental reorganization:
American Society of Civil Engineers committee sees President Coolidge. n733
Highway officials puzzled by plan n903
Live issue e585
Public Works, Department, Federated American Engineering Societies to discuss at meeting n1031
Public Works Department, Secretary Work favors n945
(See U. S. Reclamation Service.)
Personnel classification, federal employees protest action of board n905
U. S. Navy starts scrapping ships n319
U. S. Bureau of Reclamation. (See U. S. Reclamation Service.)

U. S. RECLAMATION SERVICE

British claim damages on Rio Grande reclamation project n693
Bureau of Reclamation, how reorganized. n818
"Business administration" e831
Davis, A. P., removal as Director .. e3, e211
American Association of Engineers asks Congress to investigate n156
American Association of Engineers protests n695
American Society of Civil Engineers' Board of Direction acts n75, n651
Protests e85, n115, n694
Cabinet officer needs educating e623
Explanation which does not explain .. e290
Federated American Engineer Societies protests n31, n656
National Civil Service Reform League president assails Secretary Work n361
No justification n197
Oregon engineers urge Congress to probe n241
Politics not an element in opposition to Dr. Work (R. Boeckel) ..... l 902
Secretary Work explains Davis removal n320
Wallace, L. W., secretary of F. A. E. S., finds removal of Davis a backward step n490
Work's friends justify removal n653
Federal land reclamation: a national problem. (See Irrigation, Federal land reclamation.)
Fact-finding committee (Committee of Special Advisers on Reclamation):
Appointment by Secretary Work n450
Bad beginning e748
Meeting n570
Secretary Work addresses committee .. n696
Schmitt, F. E., **News-Record** editor heard n993
Finances tabulated n1032
Interior, Department, more disorganization e748
Interior Department tells new reclamation policy n320
"Reorganized" further n777
Through the reclamation country. (See Irrigation.)
What is the matter with reclamation? .. e665
Trial balance, of reclamation e1002
United States Steel Corporation, twelve-hour day, abolition of, favored, e45. (See Labor, twelve-hour day.)
Utilities, service charge unpopular e46

V

Valuation:
Old records used in revaluing power properties 984
Principles of valuation still vague e540
Reproduction-cost-new measure of value (C. C. Williams) ..... l 567
Valves:
Hydraulic tests of flap valves on drainage pipe outlets *1052
Vermont reorganizes its government 257
Viaducts:
Cleveland, Ohio, old Superior St. viaduct to be removed n31
Denver, Colo., reconstruction of Sixteenth St. viaduct (Elsie Eaves) *750
Vicksburg, Miss., concrete sea wall, skill and responsibility required in bidders ... n403

W

Walls, hollow-tile compressive tests 753
War camp suits. (See Contractors, war camp suits.)
Washington award, 1922, conferred on Capt. R. W. Hunt *34
Washington, D. C., public buildings bill before administration n449
Watershed, high yield of water from small watershed with large water area (F. I. Winslow) 64

WATER MAINS

Denver, Colo., small size of mains 847
St. Louis, Mo., tests three water-main joint materials (L. Chivvis) *190
Seattle, Wash., break in 24-in. water main n*280
Sleeve, that was too small, repairs 20-in. water main (McK. Maffitt) j*443

WATER POLLUTION

Anti-oil pollution bills before Congress. n1031
Bad Axe, Mich., underground contamination of water supply (W. C. Hirn) .. *138
B. Coli movement in ground-water and pollution of wells (C. W. Stiles) a435
Coal mine drainage, pollution of water supplies by, Pennsylvania (C. P. Collins) *638
Industrial waste pollution conference, Philadelphia, a success 678
Industrial wastes and water pollution .. e664
Pennsylvania Sanitary Water Board, powers, duties and policies on stream pollution (W. L. Stevenson) a684

WATER POWER

Fallacies on power development (O. C. Merrill) a174
Farm-bloc water-power economies e167
Ford's dam on Mississippi at St. Paul, progress on plans n33
Niagara and St. Lawrence Rivers, revision of water-power treaty suggested. e45
Russia, water power resources concentrated in Asia (I. Gutmann) 9
Southern Appalachian Water Power Conference, meeting n32
Storage, determination of (G. H. Matthes) ..... l 318
Transmission Lines, Wenatchee Valley, Wash., transmission line tested by frozen fog (W. D. Shannon) *19
Wallenpaupack River, Scranton, Pa., application for license, by Pennsylvania Power & Light Co. n33
Wisconsin bill proposes state acquisition of water power n77
(See Hydro-electric power.)

WATER PURIFICATION

Albany, N. Y., appropriates $100,000 for filter plant improvements n199
Coagulation:
Aluminum sulphate, experiments in coagulation (F. E. Daniels) *93
Filtration:
Concrete bottom for mechanical water filters (A. L. Gammage) *430
Controller regulates water flow through pressure filters (C. C. Brown) *446
Novel type of filter, stream-line (G. W. Fuller) 770
Ohio operators discuss problems n946
Removing hard spots from filter beds (W. C. Wills) j*232
Screens, revolving, for low-lift pumping station, Detroit filters (T. A. Leisen) *14
Hydrogen-ion concentration:
"Determination of Hydrogen Ions" (W. M. Clark), reviewed by H. E. Jordan 108
Relation to precipitation and dissolution of aluminum hydroxide (F. E. Daniels) *93
Iron removal:
Benton Harbor, Mich., iron removal and softening plant *378
Berlin, Germany, deferrizing additional water supply, e416 (G. M. Fair) .. *426
Laboratory control, local, of water supplies in California, 401 (H. F. Dunham) ..... l 568
Laymen bacteria hunters, local laboratory control of water supplies in California. e417
Otsego, Mich., disinfecting city water mains (E. D. Rich) *431
Personal element in water bacteria research (H. F. Dunham) ..... l 568
Zeolite water softener suit, injunction granted, New York City n407

WATER SUPPLY

American Chemical Society discusses filtration, and activated sludge n487
Chicago, Ill., prevention of water-waste .. e125
Chicago water tunnels, determining hydraulic gradient *966
High yield from small watershed with large water area, Framingham, Mass. (F. I. Winslow) 64
Interstate water compacts, status of 505
Los Angeles, Colorado River water considered n734
Metering:
Chicago, Ill., getting metering across. e915
Maintenance of meters made to pay big dividends in Texas 439
New Jersey:
Bar to the solution of the North Jersey water supply problem (C. Herschel) . l 154
Co-operation in water supply e747
East Jersey and associated water companies consolidate n779
Montclair to buy distribution system of Montclair Water Co. n819
North Jersey moves for joint water supply n779
Ramapo water project of Bayonne upset n572
Omaha, Neb., emergency investigated by Metropolitan Utilities District n820
Penalty of neglect, shortage in New Jersey e46
Problems and progress in the field of water supply, N. E. W. W. A. discussion 515
Purity of water supply, how shall we gage? e824
Railways, Boston & Maine Ry. relinquishes water supply business 645
San Francisco, Hetch Hetchy project:
Building a 9-ft. siphon on Hetch Hetchy aqueduct. (N. A. Eckart) *100
Last section holed through n995
Four years enough to complete 558
Power distribution question in limelight n490
Water used in storage batteries 517
Wanaque water storage, New Jersey, right to double granted n1074
Waste:
Chicago, water-waste prevention started. e583

*Illustrated: a, abstracts; e, editorials; j, job and office; l, letter; n, news

Detroit, Mich., pitometer survey discloses underground leaks e415, *432
Pitometer survey, Detroit, Mich., discloses underground leaks.....e415, *432
When water is missed, New Jersey and Massachusetts e663
Waterwheels. (See Turbines).
Waterways:
U. S. Senate committee views Chicago projects n819

WATER WORKS

Chicago Sanitary District order against diversion of water, entered..... n33
Denver, Colo., construction program.....n777
Forestry on New England water-works lands 188
Morristown, N. J., one of oldest private water-works taken by city....e1001, 1010
Operation:
Detroit, coal storage building for year's supply *10
Iowa water-works men discuss dozen topics n780
Omaha, Neb., mud-laden water causes trouble n364
Screens, revolving, for low-lift pumping station, Detroit filters (T. A. Leisen) *14
St. Louis, Mo., extensions bonds, $12,000,000 authorized n946
St. Paul, Minn., votes $5,500,000 bonds for water-works and sewers.....n155
Truck trailer carrying tools for water-works emergencies j*152
Welding:
Oxy-acetylene welding in fabrication of steel structures j989
Wells:
Artesian wells, lugs welded on sections of casing j523
Depth of water, pocket electrical device for measuring (J. M. C. Corlette).....*445
Water level indicator with telephone attachment j525
Western Society of Engineers suggestions for engine terminal improvements.... 92

WHARVES AND DOCKS

Ballantyne pier, Vancouver, B. C., flangeways kept clear of asphalt.....j611
Ballantyne pier, Vancouver, B. C., jet aids in sluicing material delivered to fill on pier j*610
Ballantyne pier, Vancouver, B. C., water increases delivery radius of gravel handled in chutes j440
San Francisco Bay, China Basin, concrete caissons sunk in place for wharf and seawall (F. G. White).....*252
Wheelbarrows, standards approved by committee n161
Wilmette, Ill., Bahai Temple, composite foundations *842
Wilmington, Del., concrete memorial bridge has attractive appearance *96
Wilmington, N. C., demands a 30-ft channel to the sea..... 630
Wire:
Rust-proofing, new, "galvannealing".....n700
Wire mesh, furring clip for.....*325

WOOD PRESERVATION

Effect of wood preservative treatment tested in fungus bed..... a27
U. S. Forest Service report, timber preservation in 1922 941
Wood preservative in bored holes..... 439
Worcester, Mass., city forces build sewage treatment works (E. R. Perry).....*832
Wrench, self-adjusting.....n*700

AUTHORS

Adams & Ruxton Construction Co.: Should swimming pools be emptied in winter?..l 858
Adams, H. C.: Dates road tests and city streets .....l 650
Adams, J. D.: Street widened by moving concrete curb and gutter sections, Sioux City, Iowa j*611
Affleck, B. F.: Subways and building heights .....l 277
Arthur, W.: Ford engine used to operate Big Horn headgate j*234
Ashe, W. W.: Forests prevent silting of reservoirs a307

Balsley, F. M.: Importance of intercepting ditches on highway construction j*150
Barnett, R. C.: Computing motor-vehicle fees .....l 277
Bates, P. H.: Future requirements of cement, A. S. T. M. discussion..... a52
Behrens, R. E.: Setting forms on vertical curves for concrete paving j*233
Blair, W. P.: Modern construction of brick pavements a896
Bock, C. A.: Flood protection plant adopted by Pueblo District *48
Boeckel, R.: Politics not an element in opposition to Dr. Work .....l 902
Bosworth, W. H.: Chart shows trucks needed with mechanical and hand loading n*200
Boynton, C. O.: Low-water bridge built in Kansas j*608
Brackmann, F. A.: Concrete poles for large Swedish transmission line *136
Bragg, J. G.: Poured construction joints for concrete pavements j*687
Bragg, J. G.: Street sprinkler used in curing concrete pavements j*69
Branch, L. V.: Construction of Mitchell dam on Coosa River, Alabama *500
Breed, H. E.: Reinforcement in concrete roads worth its cost 790
Brobston, J.: Defense of cement companies.l 730
Brockway, P. L.: Details in street design..a895
Brook, H. H.: Federal land reclamation, a national problem: 6. Difficulties and complaints of the farmer 890
Brower, J. B.: How to get apprentices..l 114
Brown, C. C.: Controller regulates water flow through pressure filters *446
Brown, T. E.: Bascule bridge of new type and its construction, Mystic, Conn. *374
Browning, W. D.: New word wanted for concrete aggregate .....l 447
Bunger, M. E.: Damaged earth dam repaired by hydraulic fill, model reservoir, Trinidad, Colo. *674
Bush, E. W.: Determining the responsibility of contractors 793

Calvert, C. K.: Device removes sand from gravel wells, Indianapolis j*1064
Campbell, J. L.: Transverse fissures in steel rails 720
Canavan, Ruth: "A passion for straight lines," Biloxi, Miss. .....l 318
Carswell, C.: Truss maintains equilibrium by load on footings *1061
Chambers, F. T.: International Navigation Congress held at London 175
Chappell, F. W.: Hollow dam with notable design features, Cisco, Texas *706
Chivvis, L.: St. Louis, Mo., tests three water-main joint materials *190
Clarke, G. D.: Earth moving methods and costs, Bronx Parkway.....*186
Clemmer, H. F.: Effect of curing methods on concrete roads .....l 858
Clyde, E. S.: Economical use of irrigation water based on tests *548
Colberg, O.: Large tank for testing models of ships, Germany *139
Collins, C. P.: Pollution of water supplies by coal mine drainage, Pennsylvania ... *38
Corlette, J. M. C.: Pocket electrical device for measuring water depth in wells....j445
Cormack, E. K.: Defense of cement supply man .....l 692
Covell, V. R.: Responsibility for timber treating inspection .....l 816
Crandall, L.: Duty of irrigation water, theory and tests on.....a642
Crandell, J. S.: Barrel and automobile license plates form mixer for tar cold patch j*153
Crane, J. L., Jr.: Self-reading traffic chart j*688
Crawford, P. O.: Copco dam, operating costs on grinder used to make sand from basalt 106
Crayton, G. A.: Curve widening in pavements a*894
Crosby, W. W.: Notes on roads in the Orient *437

Dahlberg, G.: Frost action on foundations l*776
Daniels, F. E.: Aluminum sulphate, experiment in coagulation *93
Davis, A. P.: Behavior of mass concrete in service, A. S. T. M. discussion..... a56
De Blois, K. L.: Concrete crib to prevent landslides l*859
Deléry, E. F.: Further discussion of low-head pumps .....l 650
Rotary flow low-lift pump, new type..*230
Dibble, B.: Duty of irrigation water, theory and tests on a642
Items in cost of pumping water for irrigation use 140
Dougherty, N. W.: Highway surveys in nine Tennessee counties *546
Downes, J. R.: Test of acid in dewatering activated sludge, Plainfield, N. J. ..... l 29
Downing, A. S.: Engineers may be eligible for scholarships .....l 943
Dunham, H. F.: Local laboratory control of water supplies in California.....l 568
Personal element in water bacteria research .....l 568
"Sand hogs" or "sand braves." .....l 816
Durham, H. W.: Shaded topographic maps..l 526

Eagles, R. H.: Trial of acid in dewatering Imhoff-tank sludge, Plainfield, N. J...l 194
Earl, A. W.: Quay wall reconstruction, Mare Island Navy Yard *397
Eaves Elsie: Reconstruction of 16th St. viaduct, Denver *750
Eberly, V. A.: "Distant" signals at grade crossings .....l 350
Eckart, N. A.: Building a 9-ft. siphon on Hetch Hetchy aqueduct e100
Echel, E. C.: Alumina cement in France ..*347
Eddy, H. P.: Causes of failure of pipe in sand sewage filters, A. S. M. I. discussion a851
Ell, C. S.: Co-operative engineering course, Northeastern University .....l 238
Ellis, G. H.: Flood flows on maximum run-offs of Montana streams.....*1016
Etcheverry, B. A.: Duty of irrigation water, theory and tests on a642
Ewing, P. A.: Predicting next year's rainfall for Southern California 17

Fair, G. M.: Deferrizing additional water supply, Berlin, Germany *426
Fairbairn, J. M.: Transverse fissures in steel rails 720
Fauntleroy, E. B.: Simplifying taking of soundings under adverse conditions....j*771
Fellows, A. L.: Duty of irrigation water, theory and tests on a642
Earth dams require study .....l 776
Petherston, P. L.: Pavement warped by adjustable templet j*772
Field, J. E.: Failure of Apishapa dam, Colorado *418
Finebaum, H. J.: Reinforced-concrete piles fitted with shoes and jets j*987
Fisher, L. M.: Engineer's responsibility in malaria prevalence a851
Fisher, M. W.: Waltham reservoir waterproofed by a new lining 185
Fleming, D. H.: Sewer outlet through concrete dock j*689
Fleming, E.: Measurements, in surveying, by eighths of an inch.....l 447
Floyd, O. N.: Failure of Apishapa dam, Colorado *418
Fast filling of Wichita Falls hydraulic dam *1004
Fox, H. K.: Concrete flume, building in rough country *20
Fratessa, P. R.: California court denies state can cancel road contract..... 965
Freeman, P. J.: Effect of atmosphere on concrete, A. S. T. M. discussion a54
French, J. B.: Shoddy building work reviewed .....l 1068
Friedman, H. J.: Recording road maintenance costs by Gantt charts..... *878
Friedrich, Dr. E. G.: Lessons from a theater fire, Wiesbaden, Germany *552
Fry, A. S.: Fast filling of Wichita Falls hydraulic dam *1004
Fry, E. D.: Remedy for wearing of earth shoulders on paved roads .....l 360
Fuller, G. W.: Novel type of filter, stream-line 770

Gage, R. B.: Core drill tests of concrete roads, conclusions from 220
Gammage, A. L.: Concrete bottom for mechanical water filters *430
Gardiner, L.: Road finishes and subgraders, making do their best work n*949
Gardner, E. D.: Liquid oxygen used in mine blasting, Colorado j775
Gardner, W.: Duty of irrigation water, theory and tests on a642
Economical use of irrigation water based on tests *548
Garnett, F. M.: Simple balancing of quantities in highway grading.....*1009
Garrod, J. A.: Concrete aggregate produced from local deposit *1012
Godfrey, E.: Slump tests, religion and drinking water .....l 730
Solution of eccentric heel joint.....l 568
Under-pressure and the Apishapa dam..l 447
Goldbeck, A. T.: Behavior of concrete in roads, A. S. T. M. discussion a55
Goldmark, H.: Soil tests essential to foundation design .....l 277
Green, P. E.: How Chicago asphalt pavements were examined 968
Greensfelder, A. P.: National Construction Week advocated .....l 944
Greve, F. W.: New logarithmic equation for friction losses in pipes 605
Grove, W. G.: Bascule bridge of new type and its construction, Mystic, Conn. *374
Grunsky, C. E.: Federal land reclamation: 2. development of West under irrigation. 715
Gutmann, I.: Waterpower resources concentrated in Asia 9

Habermeyer, G. C.: Filtered sprinkling water used to avoid stains in stadium j*985
Hale, C. D.: Should concrete swimming pools be emptied in winter?.....l 1068
Hamlin, G. E.: Highway traffic analysis...a885
Hansel, C.: Depreciation: a definition....*181
Harder, E. H.: Solving complicated river crossing with double-deck bridge, Watertown, N. Y. *542
Harding, C. R.: Transverse fissures in steel rails a720
Hardman, R. C.: Highway construction in Panama *594
Hathaway, C. M.: Paving grades above 4 per cent overcome by pulley and deadman j775
Hawley, J. B.: Siltation in Austin and Lake Worth reservoirs, Texas 811
Hayden, A. G.: Bronx Parkway bridges tested by heavy loads.....*934
Bronx River bridge abutments held by girder brackets *112
Henderson, G. H.: State aids contractor in locating road materials, Rhode Island j*606
Henning, C. H.: Waterbound macadam base for brick road, with penetration curb in Texas *468
Henry, P. M.: Cantilever bridges of concrete, Ohio county highways.....*191
Herschel, C.: An irregular standard of railroad gage .....l 447
Bar to solution of New Jersey water supply problem .....l 154
Hinds, J.: Duty of water tests, in irrigation hl*817
Hines, H. S.: Economizing materials storage space in building construction.....j687
Hinkle, A. H.: Macadam road smoothed by combining dragging with surface treatment j312
Hintzen, L. N.: Open air swimming pool at Camp Dodge, Iowa *518
Hirn, W. C.: Underground contamination of water supply, Bad Axe, Mich. *138